

# FLIGHT

*The*  
AIRCRAFT  
ENGINEER  
&  
AIRSHIPS

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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## Flight

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## DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:—

- Mar. 20 .... Annual Meeting of Inst. Ae. E.
- Mar. 20 .... "The Report of the Aeronautical Research Committee's Panel on Scale Effect," by Capt. W. S. Farren, before R. Ae. S.
- Mar. 24 .... British entries close for Schneider Cup and Gordon Bennett Balloon Races.
- Mar. 26 .... Visit to Works of S. Smith and Sons (M.A.), Ltd., Cricklewood. Inst. Ae. E.
- April 1 .... Entries close for Schneider Cup and Gordon Bennett Balloon Races.
- April 3 .... "The British Aviation Mission to the Imperial Japanese Navy," by Colonel the Master of Sempill, before R. Ae. S.
- April 11 .... "Radial Engines for Aircraft," by Mr. S. M. Viale, before Inst. Ae. E.
- April 23 .... Visit to National Physical Laboratory, Teddington. Inst. Ae. E.
- April 25 .... Aero Golfing Society Team Match, Oxhey Golf Club.
- June 15 .... Gordon Bennett Balloon Race, Belgium.
- June 21 .... F.A.I. Conference Opens, Paris.
- Aug. 10 .... Tour de France for Light 'Planes.

## EDITORIAL COMMENT.



### The Air Estimates

NET increase of two and a half million sterling. Thus, briefly, one can define the 1924-25 Air Estimates, a summary of which is published on pp. 151-152. The amount seems small enough in view of the long leeway which this country has to make up, but if the figure of 14½ millions representing the net estimate this year is considered rather inadequate, there is some little consolation to be found in the fact that, small as it is compared with the corresponding figures from the Army and Navy Estimates, it represents an increase, while the other two fighting services have had to be content with amounts representing a considerable decrease as compared with the figures of 1923-24. Thus, apart from actual amounts, things are moving in the right direction, and the curves of service expenditure are, in our view, trending the right way, those for Army and Navy sloping downwards, that representing the Air sloping upwards. This is what FLIGHT has for years maintained was the inevitable development. We have never been of the opinion that the Air is ready at once to replace the Army and Navy, and we think it will be a considerable time yet before the Air can do that. But we do believe that the *relative* importance of the Air will continue to increase, and that this view is correct seems to be confirmed by the present estimates.

From our point of view, naturally, Vote 3 (Technical and warlike stores) is the most interesting. £5,144,500 is asked for under the heading: Aeroplanes, seaplanes, engines and spares. The corresponding figure last year was £3,620,000, so that under this head an increase of £1,524,500 is contemplated. The manner in which it is intended to apportion this amount is as follows: Complete machines, £2,789,700; complete engines, £1,450,700; machine spares, etc., £483,000; and engine spares, £421,000. There is no detail information as to what proportion it is intended to spend on aeroplanes, and how much on seaplanes. The figure asked for, £2,789,700, looks somewhat imposing, but that it is by no means extravagant will be realised when it is pointed out that, putting the average value of a complete aeroplane at £9,000

(which is probably an underestimate rather than the reverse), the money which it is proposed to spend on new machines will only purchase approximately 300 machines, which can scarcely be considered an excessive number in view of the contemplated expansions. In this connection it should be remembered that for each machine actually in the air there must be at least one complete machine standing by to take its place in order to ensure the constant maintenance at full strength of the first line machines. As a matter of fact, a third machine should be available, although not necessarily in a fully erected state. Probably this third machine, or the greater part of it, is contemplated under the heading machine spares.

The amount asked for for complete engines, although larger than last year's by a little over £500,000, will only purchase, at a rough estimate, between 400 and 500 engines, a number that is nowise extravagant, and leaves but a relatively small margin for reserve engines in relation to the number of machines.

The sums which it is intended to spend with the aircraft industry will certainly go a long way towards putting that trade on a somewhat firmer footing than it has enjoyed in the past, but that even so the industry will by no means be "in clover" will be appreciated when it is pointed out that, assuming the aircraft industry to include 20 leading firms, and further assuming the orders to be evenly distributed, each firm will only receive orders for something like 15 machines during the forthcoming financial year. In point of fact, the position is even less favourable than that, since a great proportion of the machines ordered will necessarily be experimental types which naturally cost more to produce, and on which the firms generally make practically no profit at all.

Nevertheless, Vote 3 seems fairly satisfactory, and is certainly as large as could reasonably be expected to be introduced by a Labour Government. It will be well, however, to get a definite undertaking from the Air Minister that these orders shall be placed. There have been instances on record in the past when the amounts voted for the purchase of new machines have not been expended, presumably because the technical sections involved—in the Air Ministry—could not make up their minds as to which types to order. That sort of thing should not occur in the future, and it would be well to remind the authorities of the fact at fairly frequent intervals. Otherwise there may be a repetition of the stupid policy of withholding orders until the eleventh hour, and then frantically rushing around to see how the money can be spent. A little foresight is all that is required, but the matter should not be lost sight of.

While on the subject of Vote 3 we cannot refrain from a brief reference to sub-head B—the Royal Aircraft Establishment at Farnborough. The gross estimate for this establishment is £401,000. It is true that this sum is made to "look like thirty cents," as the Americans say, by deducting £361,000 ("cash expenditure on production and experimental work for which provision is made under sub-heads A, D, E, F, and G"). Thus, the net expenditure on "The Factory" is made to look like £40,000 only, and it is within the range of possibility to see it down in the Air Estimates yet as a paying concern. It would be quite easy to make it appear so. But the matter seems to be somewhat reminiscent of the L.C.C. Tramways, which can be made to appear to carry passengers for next to nothing. When one comes down

to actual results, the R.A.E. would appear to be an expensive luxury, and there are probably quite a few who consider that the establishment has not produced value for the moneys spent on it. A scrutiny of the estimate shows that the salaries being paid at Farnborough are certainly not extravagant. In fact the majority of them appear to be on the low side, and it is difficult to see how, with such salaries, "the best brains of the country" can be attracted. The relative smallness of the salaries is, however, made up for by their number. Thus there are, apparently, sixteen designers at the Establishment. What those sixteen design, goodness only knows. One or, at most, two designers usually suffice for any ordinary aircraft firm producing many types of machines per annum. But, perhaps, according to the R.A.E. code, it is not considered polite to call a man a draughtsman. These 16 designers draw from £250 to £350 per annum, figures scarcely likely to attract top-hole men. To ordinary mortals it would appear that if the number were halved and the salaries doubled "The Factory" might hope to increase the value of its products.

Also on the pay-roll of the R.A.E. are 17 foremen and 15 assistant foremen. We do not know what is the proportion of foremen to workmen at Farnborough, but 35 foremen (there are three principal foremen) ought to be able to look after quite a fair-size works. We think that a little attention to the R.A.E. would not be out of the way, and to the ordinary layman it would appear that economies and increased efficiency could and should be effected there.

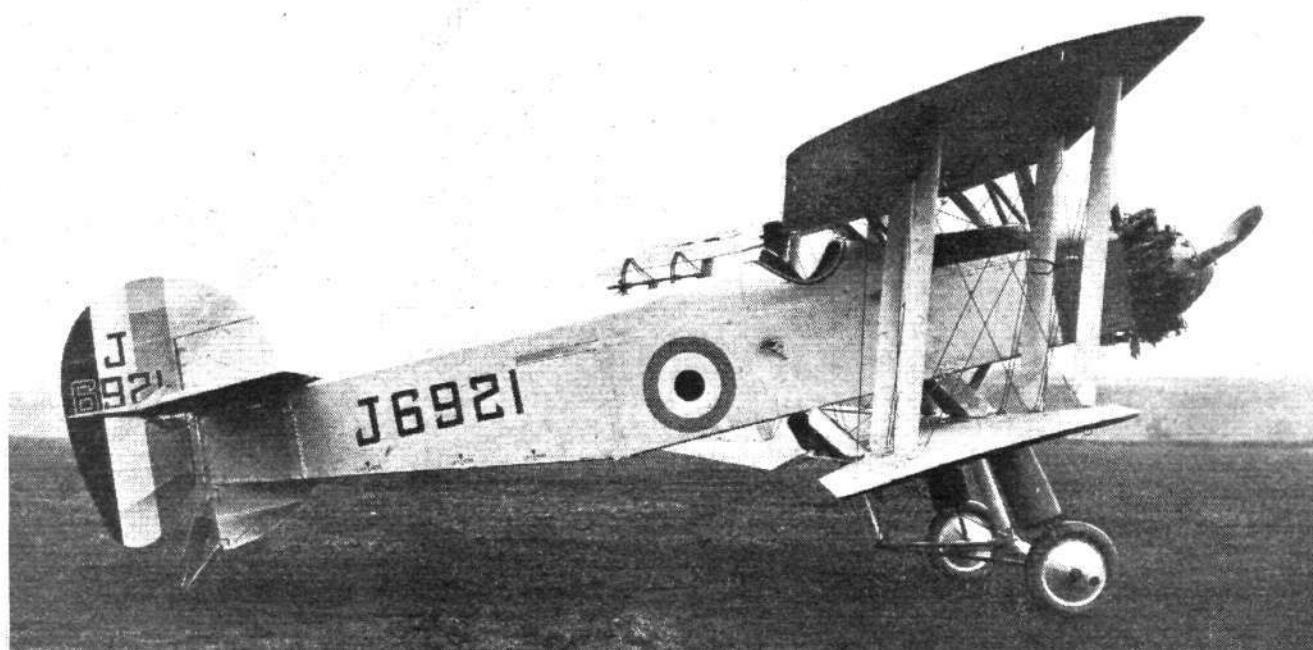
Under the heading Miscellaneous Research is found a sum of £188,000 for general research (metal construction, accessories, etc.). This amount is small enough, in all conscience, and is but very little greater than the corresponding amount of last year. A good deal more might have been expended under this head with advantage. £76,500 is set aside for contributions and grants, and it is stated in a footnote that this figure includes £26,000 for work to be carried out at the N.P.L.

As in previous years, one of the largest votes in the estimates is Vote 4, Works, Buildings and Lands. The sum which it is estimated will be required is no less than £2,127,000, which represents a net increase on last year's net figure of £328,000. We are constantly told that all this money spent on ground establishments is necessary, and that once these establishments are in existence they will suffice for a very much expanded Air Force. But will they? The number of times the headings "Alterations and additions to accommodation" occur in the present estimates is astounding. To take but a few amounts occurring under that heading: Bircham Newton, £13,000; Catterick, £15,000; Digby, £15,000; Filton, £20,000; Kenley, £30,000; Martlesham Heath, £20,000; Northolt, £50,000. And so it goes on by varying amounts. Presumably all this is necessary, but it does appear to the lay mind that a disproportionate amount is being spent on bricks and mortar, and not enough on machines, engines, practical flying, and the things for which the R.A.F. primarily exists.

The sum of £284,000 asked for the Auxiliary and Reserve Air Forces should be sufficient for a start, and when the necessary legislation has been introduced it is to be hoped that this scheme will be vigorously proceeded with.

The increase in the Civil Aviation Vote is mainly due to the contemplated extension of Croydon aerodrome.



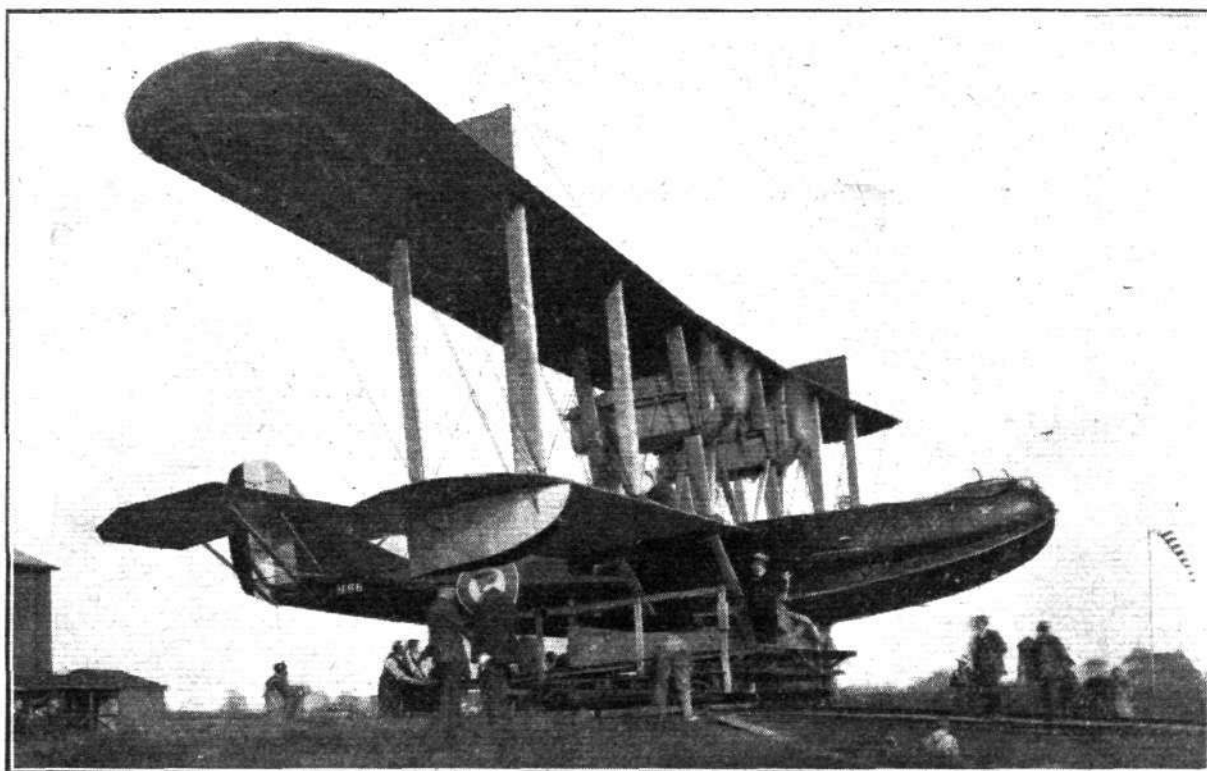


The Armstrong-Siddeley "Wolf" is a two-seater Corps Reconnaissance machine with Siddeley "Jaguar" engine. The undercarriage is of unusual design, and the cut-away front of the fuselage is another unusual feature.

## THE "P.5" OR PHŒNIX "CORK" FLYING BOAT, And Some Other Products of the English Electric Co., Ltd.

A BRANCH of the English Electric Co., Ltd., whose ramifications extend very far afield indeed, and who have works at Bradford, Coventry, Preston, Rugby and Stafford, the aircraft works of the E.E.C., are established at Preston, Lancashire, while more recently a smaller works at Lytham has been taken over. At Preston and Lytham a great deal of interesting work is being and has been carried out, but this is work about which the general public hears relatively little, as the machines built there are to the order of the Air Ministry, and may not, therefore, be referred to in detail. Now, however, the

well worth a closer examination, as it incorporates certain features and improvements which not only placed it well ahead of certain much-used types at the time of its inception, but which make it even today a machine of very considerable merits. As an example, it may be mentioned that one of the "P.5" boats taking part in the development flight during 1922 acquitted itself so well of its task that it was regarded by many as being one of the best machines to take part, and this in spite of the fact that the actual machine was at the time already four years old.

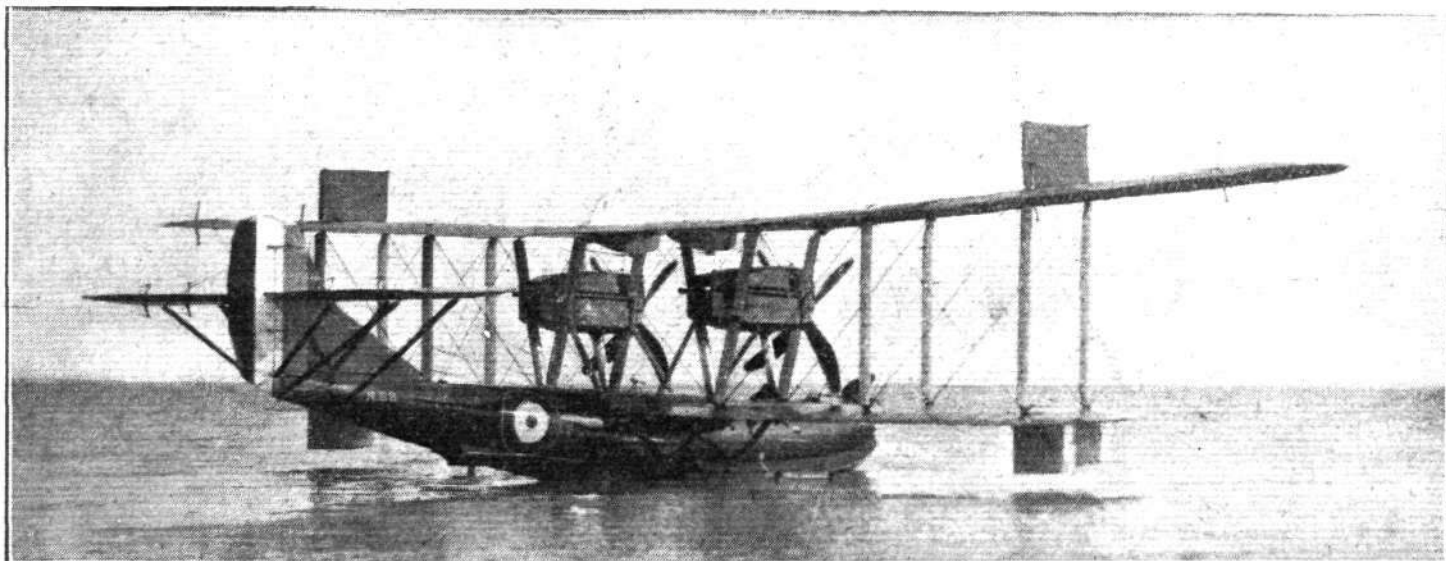


The Phœnix "Cork," or "P.5," of the English Electric Company. This machine is fitted with two Rolls-Royce "Eagle" engines. Three-quarter front view.

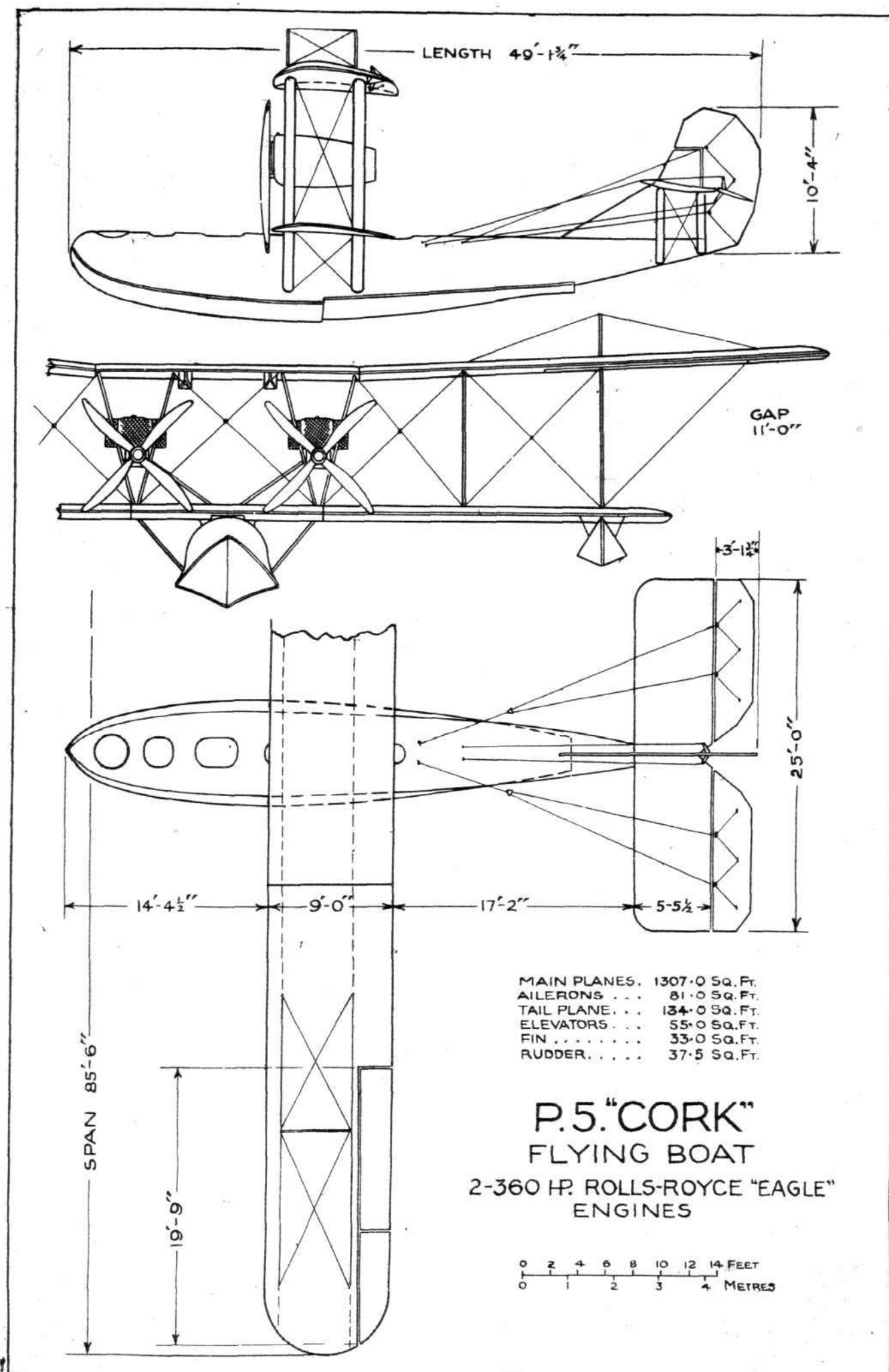
restrictions surrounding one of the E.E.C. machines have been relaxed, and it has become possible to give an illustrated description of it in *FLIGHT*. This machine, known variously as the "P.5" (the works type number) and the Phœnix "Cork" (the Air Ministry name), although it cannot claim the interest attaching to the most recent types, having been built as long ago as 1918, is nevertheless very

### The Phœnix "Cork"

The responsibility for the design of the "P.5" rests with Mr. W. O. Manning, chief designer to the English Electric Company. Mr. Manning is, of course, well known in aviation circles, having been actively engaged in design and construction since the early days of flying. Thus it may be recollected that he was largely responsible for the somewhat



The "P.5" on the water.



THE "P.5" FLYING BOAT: General arrangement drawings, to scale. These drawings show the Mark I machine. The Marks II and III differ slightly, the latter having Napier "Lion" engines instead of Rolls-Royce "Eagles."



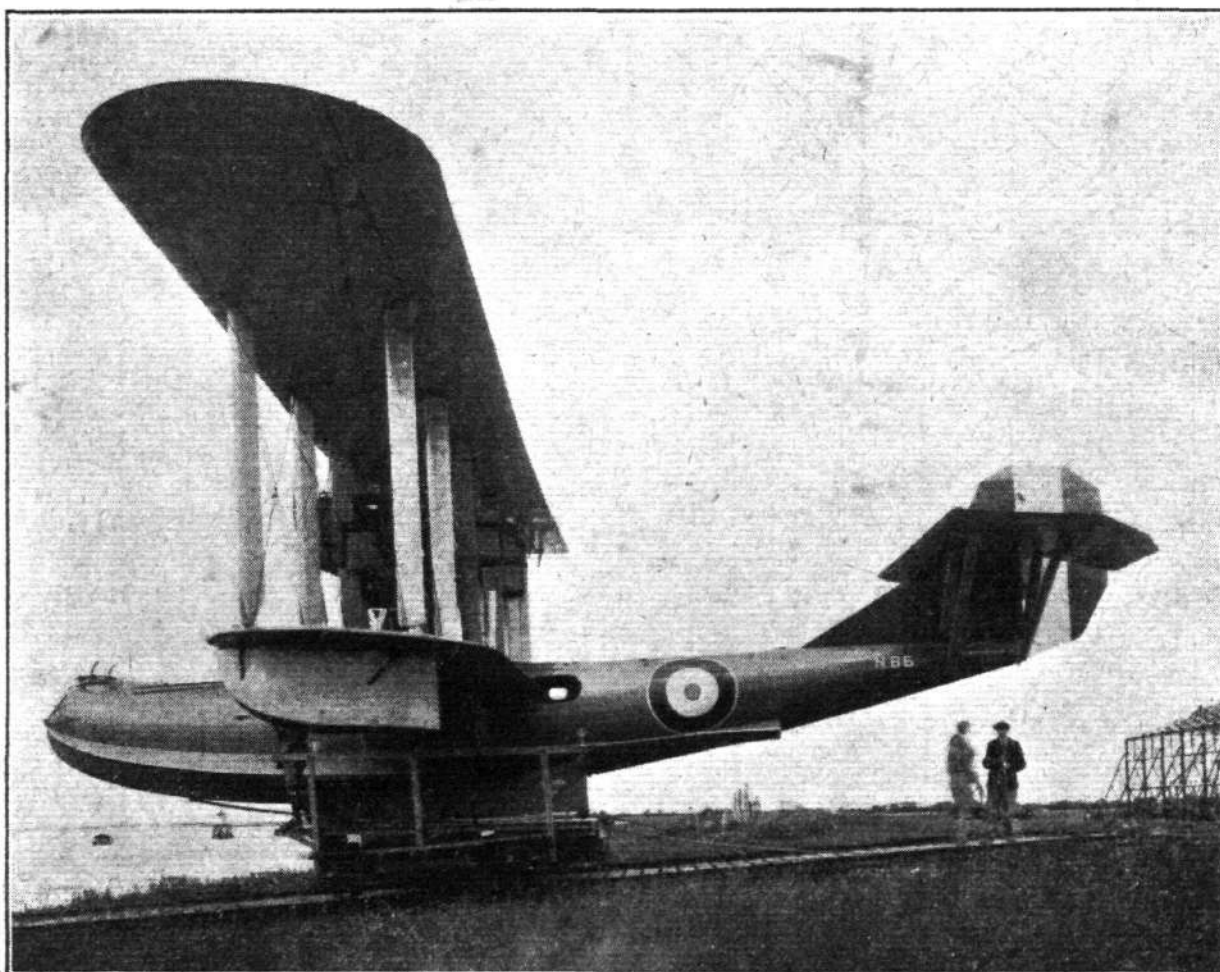
curious "Coventry Ordnance" biplane which appeared at Brooklands in 1912. More recently Mr. Manning has been heard of in connection with the "Wren," perhaps the most extraordinary aeroplane ever built.

Fundamentally the "P.5" is a twin-engined flying boat, with a circular-section hull of the Linton-Hope type. The original "P.5," or Phoenix "Cork," was produced in 1918 at the request of the Air Ministry, as a machine was wanted to replace the then standard F.5 flying-boat. Owing to the Armistice, and to the fact that very large quantities of the F.5 type flying-boat had been produced and were in stock, the "P.5" was not produced in quantities, but the experiments with the first machine were so successful that slightly modified versions, known as the "P.5 Mark II" and "P.5 Mark III," were produced. These differed somewhat from the original machine, chiefly the Mark III, which has Napier "Lion" engines instead of the Rolls-Royce "Eagles" of the Marks I and II.

As reference has been made to the F.5 flying-boat, and the statement made that the "P.5" was designed to be an improvement upon that type, it may be of interest to take

of effecting improvements. The hull proper, as well as the planing bottom and fin top, is built up of two skins of mahogany, the inner skin being laid diagonally and the outer longitudinally. Varnished fabric is placed between the two skins, as the designer is of the opinion that this form of construction, although slightly more costly, results in greater durability. Three-ply wood has been entirely eliminated from the construction as a material which, however suitable for land machines, is unsatisfactory for seaplane work. The stringers and circular frames are of rock elm, as are also the cantilever members carrying the chine. The result is that the planing bottom can flex with the hull, which was not possible while the planing bottom was carried on rigid frames.

The space between the planing bottom and the main hull forms a watertight compartment, extending from the nose to the rear step, which occurs about half-way between the trailing edge of the lower plane and the stern post. This compartment is divided fore and aft by the keel member into two separate compartments, and each side is further subdivided into five separate watertight compartments by flexible watertight bulkheads. Thus the double planing



The "P.5" on the slipway. The men standing under the tail give a good idea of the size.

a few of the figures relating to the F.5, and to compare them with the corresponding figures for the "P.5," Marks I, II, and III. It has already been pointed out that the first two are fitted with Rolls-Royce "Eagle" engines, while the last has two Napier "Lions." Following is a table of comparative performances:—

	"F.5."	"P.5" Mk. I and Mk. II.	"P.5" Mk. III.
Weight, light ..	9,100 lbs.	7,350 lbs.	8,000 lbs.
Weight, loaded ..	12,700 "	11,600 "	12,500 "
Useful load ..	3,600 "	4,250 "	4,500 "
Horse-power ..	720	720	900
Speed at 2,000 ft. ..	76 knots	90 knots	95 knots
Climb to 2,000 ft. ..	7 mins.	4 mins.	3 m. 20 s.
Climb to 6,500 ft. ..	30 mins.	15 mins.	14 mins.
Climb to 10,000 ft. ..	—	30 "	25 "
Service ceiling ..	7,000 ft.	13,000 ft.	13,000 ft.

## Construction

As already mentioned, the boat hull of the "P.5" is of the circular-section type introduced by the late Major Linton-Hope, but detail modifications have been introduced from time to time where experience has indicated the possibility

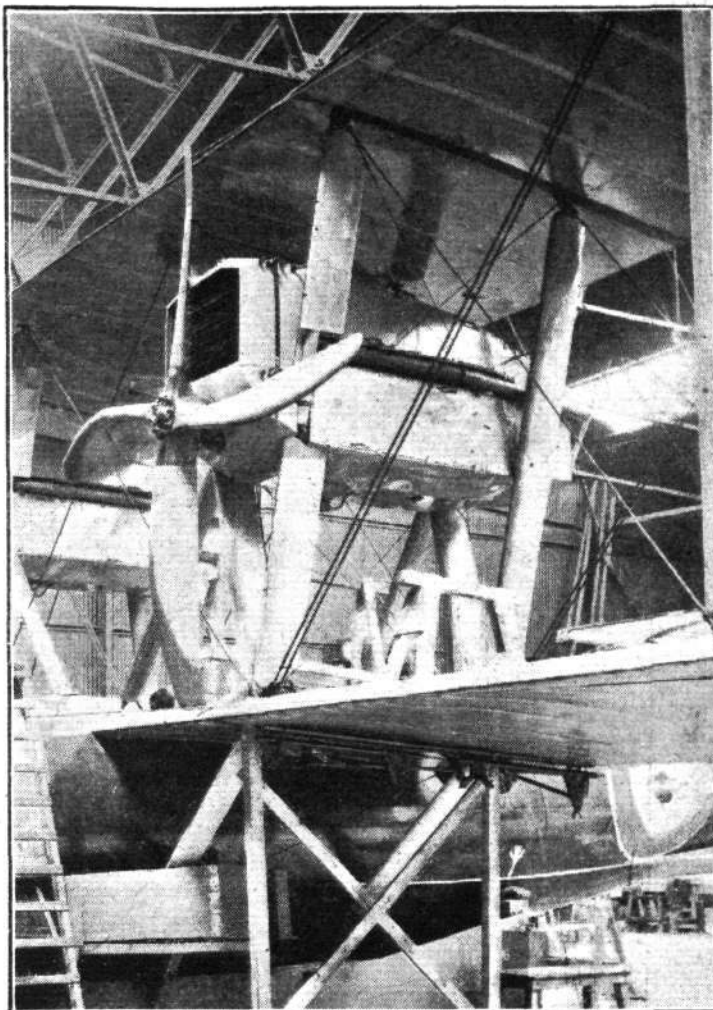
bottom is divided into 10 separate watertight compartments, and even if all these were flooded the machine would be in no danger of sinking unless the inner hull had also been punctured. A bilge pump of ample capacity is provided, and drain plugs are fitted inside the hull so as to enable the double bottom to be pumped dry while the machine is afloat. Drain plugs are also fitted on the outside of the planing

bottom. The wing-tip floats of the first "P.5" were of the usual rectangular section, with a V-bottom. In later types, however, floats of triangular section are employed, built up of a series of triangular frames supported by laminated circular hoops. This form of construction allows a slight amount of flexibility, much as does the main hull construction. The bottom and sides of the wing-tip floats are covered with double diagonal mahogany planking, through-fastened to the frames and timbers, which are closely spaced as in boat-building practice. The central frame is additionally stiffened, and serves as a watertight bulkhead, dividing each float into two watertight compartments without impairing the flexibility. Owing to their peculiar shape, these floats need not be carried on wire-braced struts, but can be attached direct to the under-side of the lower main plane.

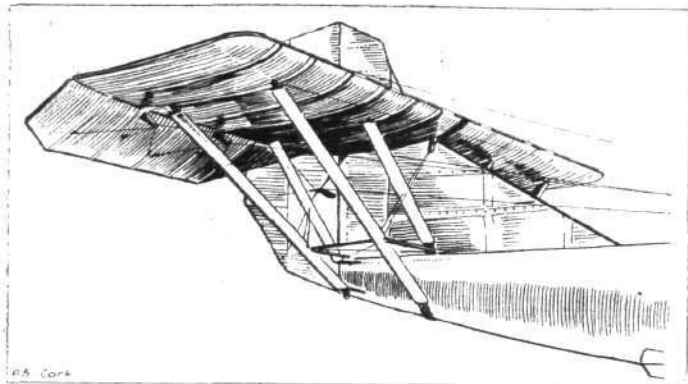
### Main Planes

The main planes of the "P.5" (which are of T.16 section in Marks I and II) are built up of lattice ribs on box-section spars. The construction of the spars is indicated in one of our sketches. The top and bottom flanges are of spruce, with distance blocks of various shapes separating them. Triangular-section fillets are employed in the corners of the box section to give greater glueing surface, and, finally, the sides of the spars are covered with spruce. The ribs are of lattice construction, three-ply having been eliminated entirely. The wing-spar fittings are of more or less orthodox design, built up from sheet steel. One such typical fitting, occurring at the junction of the wing root with the engine struts and sloping stay strut to the hull, forms the subject of three of our sketches, which should make the arrangement clear.

The interplane struts are of somewhat unusual construction, inasmuch as they consist primarily of circular-section steel tubes around which streamline fairings are built. This

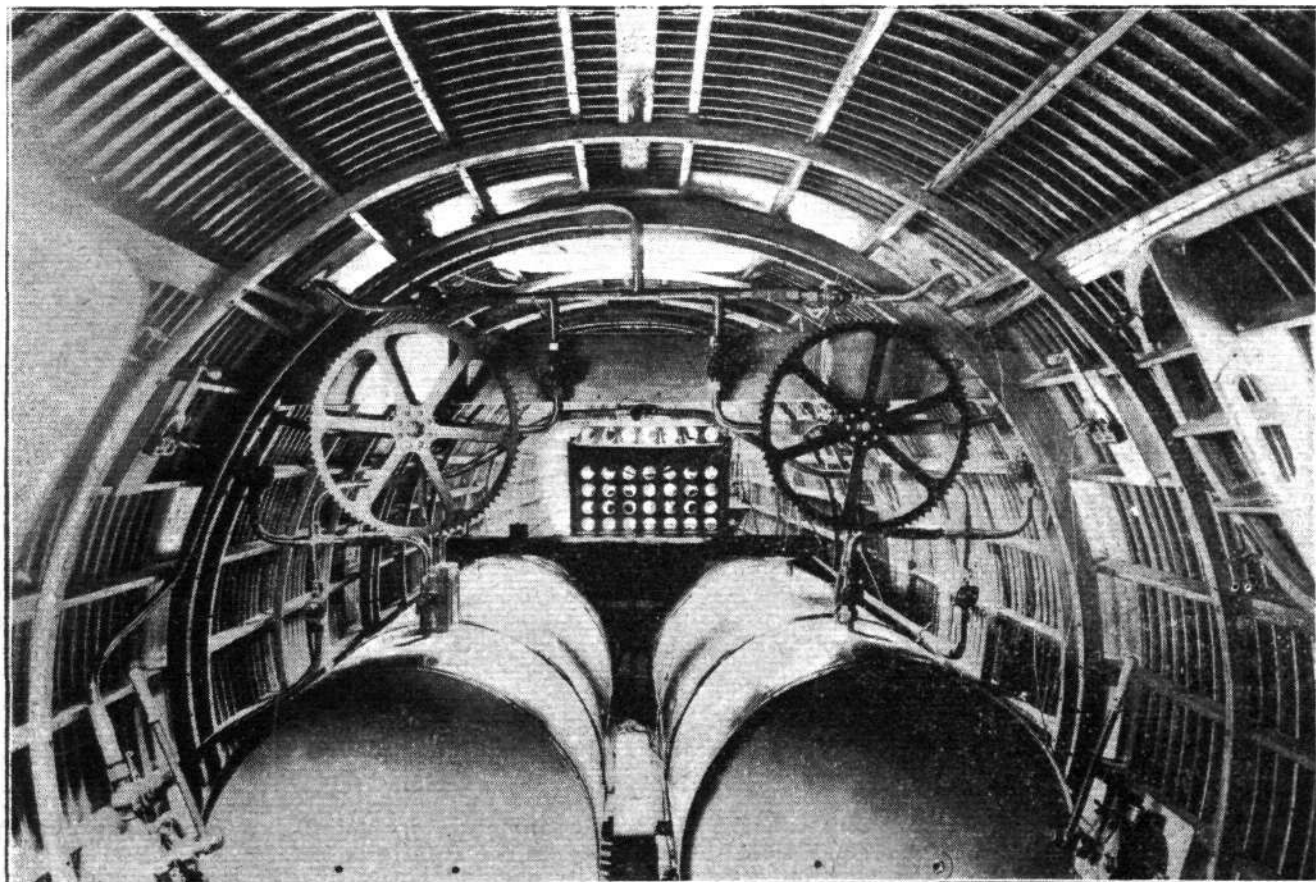


The cowling of one of the Rolls-Royce "Eagles" of the "P.5."



Sketch showing the tail of the "P.5."

in itself is not new, but the construction of the fairings is unusual in that it consists of light ribs carrying a three-ply covering over the front third, with merely a doped fabric covering over the trailing portion. The steel tubes of the struts terminate in fork-ends, bolted to eyebolts passing vertically through the wing spars. The internal-drag bracing struts are also round steel tubes, but their end attachment is different from that of the interplane struts in that they simply abut on the spar and are located by shallow sockets welded



View inside the hull of the "P.5," looking forward. The large sprockets are for the petrol pumps, windmill-driven by propellers mounted on deck.



to the fitting. In the sketch of the spar fitting these sockets can be seen surrounding a bolthead.

Large ailerons are fitted on the top plane only, and are operated by cables in the usual way.

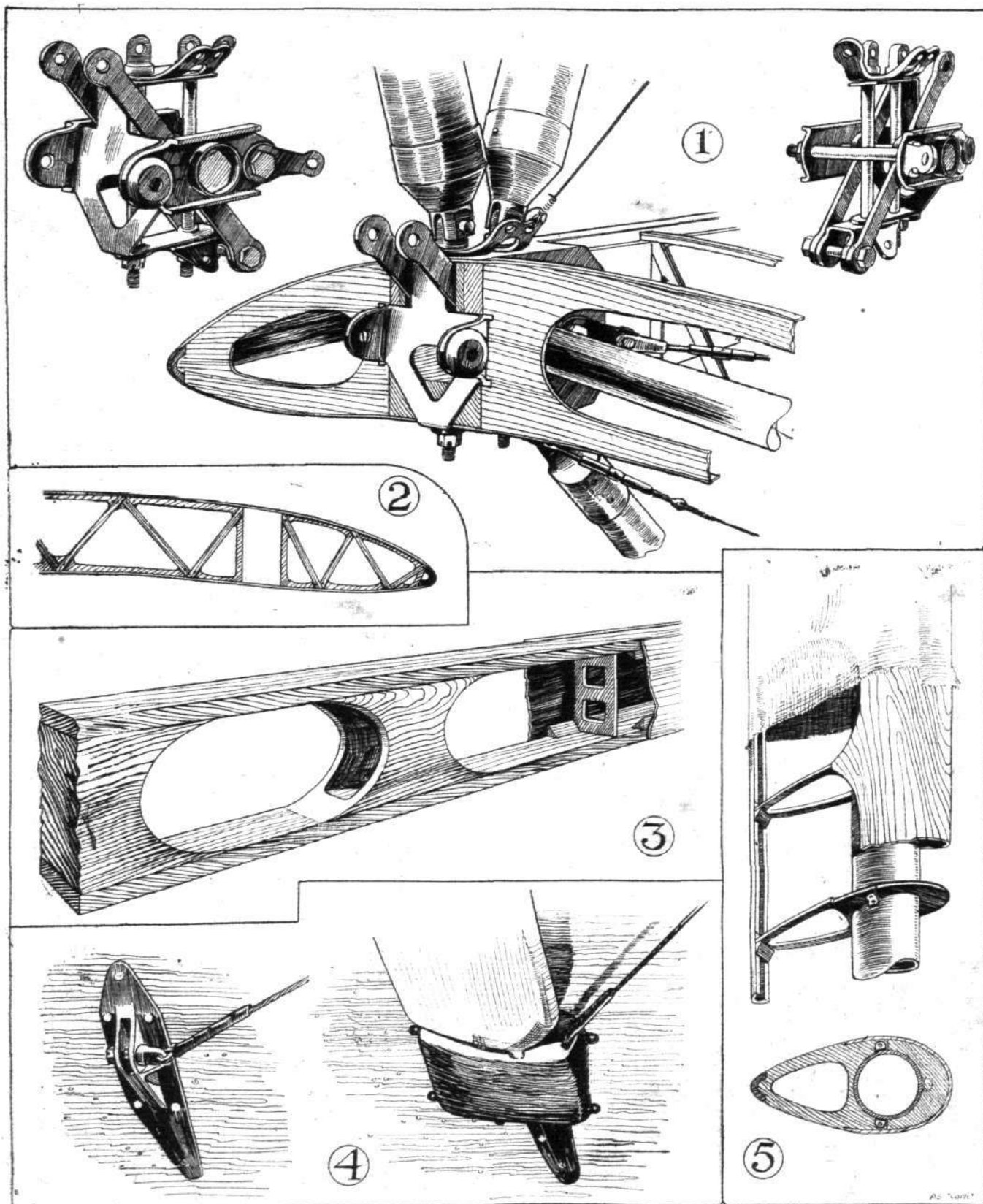
The tail members are of orthodox design, the tail plane being braced from below by four struts. Although the angle of the tail plane can be altered by raising or lowering the attachment to the stern-post, no provision is made for trimming the tail during flight.

#### Power Plant

The two Rolls-Royce "Eagle" engines (Napier "Lions" in the Mark III) are mounted between V-interplane struts,

and are entirely cowled-in, although the cowling is so arranged as to be readily detached for inspection or overhaul. Each engine drives a four-bladed tractor screw mounted high so as to be well clear of the spray.

The petrol is carried in cylindrical tanks mounted in the hull, and each engine has a small gravity tank mounted under the top plane. The petrol is pumped up to the gravity tanks by two small windmills mounted on the deck of the hull. The large sprockets of the chain transmission may be seen in the photograph showing the interior of the hull. Smaller sprockets are, of course, mounted on the spindles of the windmills, so that the pumps are considerably geared down.



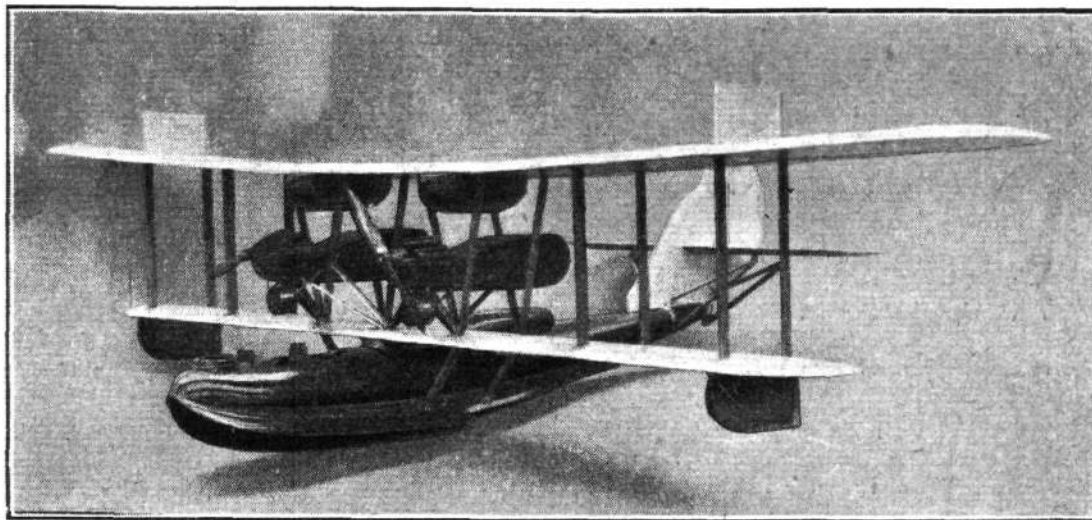
THE ENGLISH ELECTRIC COMPANY'S "P.5": Some constructional details. 1 shows a typical wing-spar fitting, the details of which are clear from the sketches on the right and left. 2, a wing rib. 3, Details of a wing spar. These consist of spruce flanges separated by packing pieces of different shapes, with spruce sides. Triangular-section strips are placed in the corners to increase the glued area. 4 shows the attachment of the sloping struts running from the lower plane to the hull chine. The fitting is covered with a wood fairing. 5 gives details of the built-up interplane struts, which consist of steel tubes with three-ply and fabric fairings.



An engine-control lever of unusual design was fitted on the first "P.5." This was a single lever universally pivoted and operating by short rods and cranks two pulleys, one on each side. When the lever is moved forward without being tilted sideways both engine throttles are opened simultaneously. If, however, the lever is pushed over to the left, the starboard engine is given more throttle than the port one,

may be stated that with this gear the pilot trims the tail by operating a hand pump. By suitable setting of cocks the tail is then made to increase or decrease its angle of incidence. A very simple arrangement prevents the pilot from "overwinding" the gear, and continued pumping merely circulates the working fluid used through passages provided for the purpose.

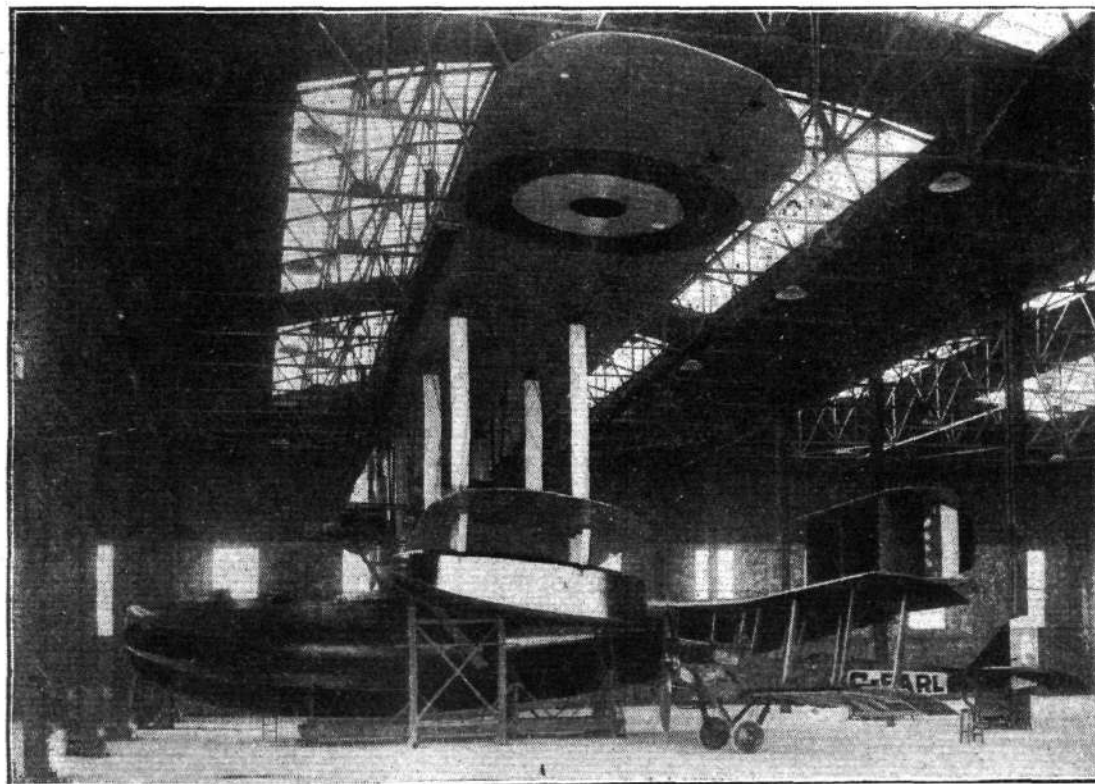
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○  
○ The "Kingston" is a five-seater reconnaissance flying-boat, designed and built by the English Electric Company. The engines fitted are two Napier "Lions." Our photograph shows a scale model of the "Kingston."  
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and *vice versa*. The arrangement should be very handy, and should soon become quite instinctive in operation, but, for some reason or other, the pilots did not, we believe, like it, and engine controls of more orthodox design are now fitted.

The machine controls are of standard type, but very great attention has been paid to the reduction of the amount of physical effort required to fly the "P.5," and we believe that the machine is very much lighter on the controls than are the majority of machines of this size.

Following are the main characteristics of the "P.5" Mark II boat:—Length o.a., 49 ft.; span, 85 ft.; height, 21 ft.; hull length, 45 ft.; weight empty, 7,350 lbs.; useful load, 4,250 lbs.; total loaded weight, 11,600 lbs. Maximum speed, 90 knots (105 m.p.h.); cruising speed, 78 knots (90 m.p.h.); range at cruising speed, 800 miles. Climb: 2,000 ft. in 4 mins., 6,500 ft. in 15 mins., 10,000 ft. in 30 mins. Service ceiling, 13,000 ft. It will be seen that the empty weight is exceptionally low for a flying-boat, and that the ratio of empty weight to useful load is excellent.



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○ A Giant Sea-plane: The four-engined "Atalanta" flying boat was designed by the Fairey Aviation Company and built by the English Electric Company. It is fitted with four Rolls-Royce "Condor" engines. A good idea of size is provided by the D.H.6 standing next to the "Atalanta."  
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#### Hydraulic Tail-Trimming Gear

It has been mentioned that the "P.5" is not normally provided with a tail-trimming gear. If desired, however, a special gear, designed and patented by Mr. Manning, can be fitted. This is of the hydraulic type, and has been experimented with on other types of Mr. Manning's design. It is, we understand, giving good results, and should be particularly valuable on very large machines. Without going into technical details, which are reserved for a future article, it

The "P.5" Mark III, as already mentioned, is fitted with two Napier "Lions," and its main characteristics are:—Length o.a., 53 ft.; span, 85 ft.; height, 21 ft.; hull length, 45 ft.; weight light, 8,000 lbs.; useful load, 4,500 lbs.; total loaded weight, 12,500 lbs. Maximum speed, 95 knots (110 m.p.h.); cruising speed, 78 knots (90 m.p.h.); range at cruising speed, 800 miles. Climb: 2,000 ft. in 3 mins. 20 secs., 6,500 ft. in 14 mins., 10,000 ft. in 25 mins. Service ceiling, 13,000 ft.

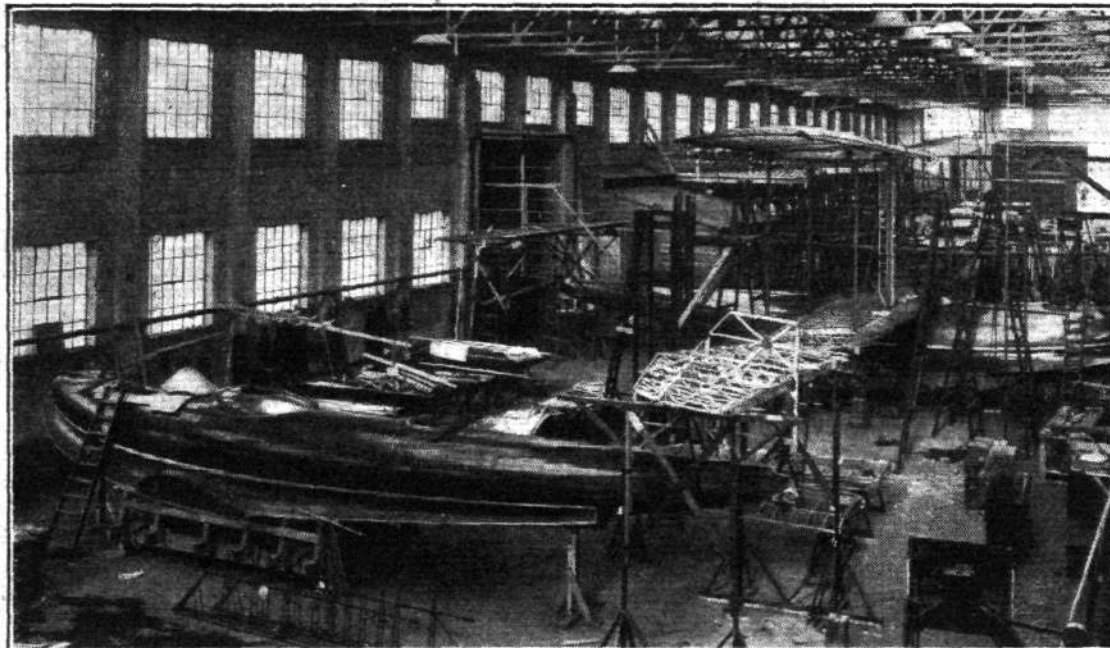
## Other Types

Apart from the "P.5" and variations, the English Electric Company has designed and built several other types. As, however, these are to the order of the Air Ministry, and are not yet released for publication, it is not possible to make other than a brief reference to them.

The "Kingston" has been developed from the "P.5" type, and is of slightly larger size, being fitted with two Napier "Lion" engines. A photograph of a scale model

Cowes, in the sheds of Mr. S. E. Saunders, a flying-boat having this feature. She was designed by Mr. Hyde Beadle, and actually succeeded in getting off the water, although doubtless she would be regarded as very much under-powered according to modern ideas. Nevertheless, the arrangement is a promising one, and it will be interesting to see how the "Ayr," with the aid of some 10 or 12 years' further experience, will behave.

The main works of the English Electric Company's aviation

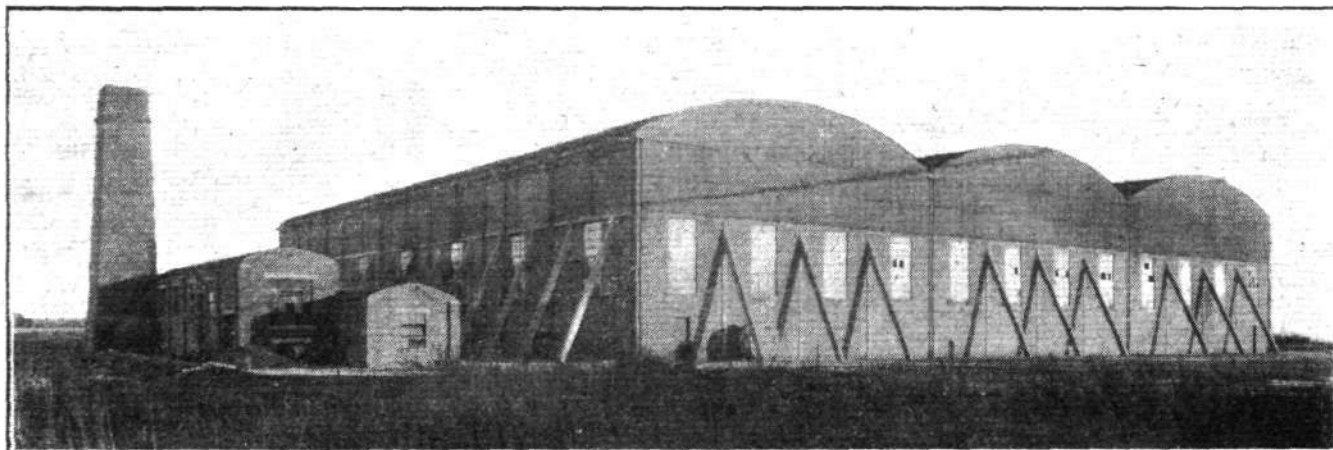


View inside the erecting shop of the Preston Works of the English Electric Company.

of the "Kingston" is published herewith, from which the general arrangement should be clear.

The "Atalanta" is a six-seater open-sea reconnaissance flying-boat fitted with four Rolls-Royce "Condor" engines. A photograph of this machine is published herewith. It should be mentioned that the "Atalanta" is not a Manning-designed craft, having been designed by the Fairey Aviation Company, of Hayes, Middlesex. She was, however, built by the English Electric Company. The D.H.6 standing next to the "Atalanta" in the photograph should give a good idea of her size. It is not permissible to publish dimensions.

section are situated at Preston, and here most of the constructional work is carried out. Fairly recently, however, works have been acquired at Lytham, which is on the shore, and these are used for erecting and for housing the boats during the period when flying tests are being carried out. The Lytham works are capable of considerable expansion, should such be necessary. They, as well as the Preston works, are presided over by Mr. Gibson Knight, who is works manager of the aircraft department. The drawing-office staff is installed at the firm's headquarters at Queen's House, Kingsway, London, W.C. 2. In the past, owing to the fact



THE LYTHAM WORKS OF THE ENGLISH ELECTRIC COMPANY: There is room for expansion should the necessity arise, and the slipways, etc., make these works especially suitable for seaplane work.

The "Ayr" is an experimental flying-boat of rather unorthodox design. Perhaps the most unusual feature is the arrangement of the lower main plane, which projects from the planing bottom and is set at a large dihedral angle. This wing is planked like the main hull, and serves the purpose of maintaining lateral stability on the water, thus doing away with wing-tip floats. It will be recollected that all the Dornier flying-boats have short wing roots projecting from the hull, but Mr. Manning has gone a step further and has extended these wing roots to form a "pukka" lower plane. In the very early days of flying there was built at

that the firm has been engaged almost exclusively on Air Ministry work, relatively little has been heard of the English Electric Company's aircraft section, but there is good reason to believe that in the future considerably more will be heard of the very excellent products of this firm. Perhaps we might express the hope that Mr. Manning will design a commercial flying-boat, as the performance of the "P.5" appears to be such that, with minor modifications, she should be comfortably capable of regularly doing the journey between, say, Harwich and Copenhagen with quite a respectable paying load on board.



# AIR ESTIMATES, 1924-1925

A Net Increase of £2,500,000

THE air estimates, published on March 7, show a net increase over last year's estimates of two and a half million. The gross estimate is £19,257,400, but appropriations in aid are expected to reduce this figure to a net total of £14,378,000. Non-effective services, with a net estimate of £133,000, bring the total up to £14,511,000, which is the total estimated expenditure after deducting appropriations in aid. An increase in personnel of 2,000 is contemplated (*i.e.*, from 33,000 all ranks to 35,000 all ranks). Effective services are estimated to require the following amounts:—

Votes.	Net Estimates.	
	1924-25.	1923-24.
1. Pay, etc., of the R.A.F. ..	2,941,000	2,909,260
2. Quartering, stores (except technical), supplies, and transport ..	1,452,000	1,289,600
3. Technical and warlike stores (including experimental and research services) ..	5,700,000	3,867,300
4. Works, buildings, and lands ..	2,127,000	1,799,000
5. Medical services ..	195,000	232,740
6. Educational services ..	480,000	451,100
7. Auxiliary and reserve forces ..	284,000	238,000
8. Civil aviation ..	355,000	287,000
9. Meteorological and miscellaneous effective services ..	134,000	158,000
10. Air Ministry ..	710,000	648,000
Total effective services ..	£14,378,000	£11,880,000
11. Non-effective services (half-pay, pensions, etc.) ..	133,000	131,000
Total effective and non-effective services ..	£14,511,000	£12,011,000
Total net increase ..	£2,500,000	

## Personnel

The grouping and numbers of personnel this year are as follows:—Under Vote 1: Air officers, 19; commissioned officers, 2,782; warrant officers, 252; non-commissioned officers, 3,734; airmen, 20,301; boys, 292. Provided for under Vote 3 are: Commissioned officers, 26. Vote 5 provides for: Commissioned officers, 221; warrant officers, 11; non-commissioned officers, 168; airmen, 1,298. Provision is made under Vote 6 (educational services) for: Air officers, 3; commissioned officers, 152; cadets, 150; warrant officers, 42; non-commissioned officers, 426; airmen, 1,896. Under Vote 7 provision is made for the following: Commissioned officers, 6; non-commissioned officers, 3; airmen, 5. Provision is made under Vote 10 (the Air Ministry) for: Air officers, 13; commissioned officers, 139; warrant officers, 1; non-commissioned officers, 3. It is pointed out that the numbers provided for under Votes 1 and 5, as above, include Army personnel attached to the Royal Air Force.

Under Vote 1 the summarised figures are as follows:—Pay and personal allowances of officers, £1,272,500; pay and personal allowances of men, £2,016,500; separation and marriage allowances, £144,000; miscellaneous allowances, £17,500; civilians, £609,500; service gratuities to officers and men on discharge, £4,500; recruiting staff and expenses, £15,500; gross total, £4,080,000, from which are to be deducted appropriations in aid of £1,139,000, bringing the net total down to £2,941,000, a net increase over last year's figures of £31,740. Vote 2 does not appear to call for any summarised statement; the total under this vote is £1,452,000.

Perhaps the most interesting of all is Vote 3 (technical and warlike stores), which provides for the following amounts:—Aeroplanes, seaplanes, engines and spares, £5,144,500; Royal Aircraft Establishment, £40,000; A.I.D., etc., £135,000; aircraft, technical and warlike stores, £94,500; armament and ammunition, £388,000; electrical stores, £204,000; miscellaneous research, £264,500; miscellaneous materials, £258,000; balloons and hangars, £7,500; mechanical and other transport, £293,000; petrol and oil, £396,000; war liabilities, £130,000; gross total, £7,355,000; appropriations in aid, £1,655,000; net total, £5,700,000.

The estimate of £5,144,500 (for aeroplanes, seaplanes, engines, and spares) exceeds that for last year by £1,524,500, and it is of interest to find that out of this amount it is intended to spend £2,789,700 on the purchase of complete

machines; £1,450,700 on complete engines; £483,000 on machine spares, parachutes, and miscellaneous; £421,000 on engine spares; and £100 on airships. The net cost of the R.A.E. at Farnborough for the present year is estimated at £40,000, compared with £35,500 last year. The item of £264,500 under sub-head G of Vote 3 is stated in a footnote to include £26,000 for work to be carried out at the National Physical Laboratory. The appropriations in aid, which are expected to reduce the net total of Vote 3 to £5,700,000, are mainly repayments by the Middle East Department in respect of Iraq, Palestine and Trans-Jordan (£1,190,000), repayments in respect of supplies to British and Indian troops in Iraq and Palestine (£35,000), and repayments by the Indian Government (£250,000).

Under Vote 4 (works, buildings, and land) the summarised statement is as follows:—Staff for works services, £263,500; new works, additions and alterations, amounting to more than £2,000 each, £1,378,500; minor new works, additions, etc., £102,000; ordinary repairs, etc., £739,000; grants in aid of works, £12,000; purchase of lands and buildings, £225,000; rents, compensations and reinstatements, £130,000; incidental expenses of Air Ministry estates, £6,000; provision of telephone and telegraph services, £1,000; miscellaneous works services, £16,000; stores and plant for works (net), £117,000; machine tools, £10,000; gross total, £3,000,000; appropriations in aid, £873,000; net total, £2,127,000, compared with £1,799,000 in the 1923-24 estimates.

The medical services (Vote 5) are estimated to require £195,000, as follows:—Pay and personal allowances of officers, £136,000; pay and personal allowances of airmen, £122,000; nursing service, £32,000; fees, etc., to civil medical practitioners, £4,000; civilians employed in hospitals and sick quarters, £9,500; medical stores and supplies, £25,000; payment to hospitals, £36,000; miscellaneous charges, £8,000; gross total, £372,500; appropriations in aid, £177,500; net total, £195,000.

Vote 6 (educational services) is estimated to require £480,000, under the following subheads:—R.A.F. Staff College, Andover, £13,200; R.A.F. Cadet College, Cranwell, £186,500; School of Technical Training (Boys), Halton, £251,300; general and vocational training of airmen, £41,500; miscellaneous educational services, £5,000; gross total, £497,500; appropriations in aid, £17,500; net total, £480,000.

For the Auxiliary and Reserve Air Forces (Vote 7) the sum of £284,000 is asked, under the following subheads:—Pay and allowances of permanent staff of Reserve, £4,400; pay and allowances of Reserve during training, £20,000; Reserve pay, £152,500; capitation payments to civil companies for training, etc., courses, £96,000; miscellaneous expenses, £1,500; Auxiliary Air Force, £5,000; Special Reserve, £5,000; gross total, £284,400; appropriations in aid, £400; net total, £284,000.

Civil aviation (Vote 8) shows an increase of £68,000 over last year's, the amounts asked for under the various subheads being as follows:—Civil aviation aerodromes, £36,000; aerial routes, surveys, etc., £34,000; technical equipment, £10,000; works, buildings and lands, £148,000; miscellaneous, £3,000; civil aviation subsidies, £137,000; gross total, £368,000; appropriations in aid, £13,000; net total, £355,000. This figure excludes the cost of the Headquarters Staff of the Director of Civil Aviation, provision for which is made under Vote 10, subhead E, while the cost of meteorological services at civil aerodromes is estimated at £7,225, and is included in Vote 9, subhead E.

The £134,000 asked for under Vote 9 are estimated to be apportioned as follows:—Compensations for losses, etc., £38,000; losses by exchange, etc., £1,000; telegraphic and telephonic charges, £63,000; meteorological services, £72,900; miscellaneous, £16,000; allowances to civil medical practitioners and ministers of religion, £5,000; gross total, £196,000; appropriations in aid, £62,000; net total, £134,000.

No less than £710,000 is estimated to be required by the Air Ministry vote (Vote 10), the subheads under which this vote will be accounted for being:—The Air Council and department of the Secretary, £285,547; the department of the Chief of the Air Staff, £161,908; the department of the Air Member for Personnel, £52,258; the department of the Air Member for Supply and Research, £124,828; the department of the Under-Secretary of State for Air, £16,086; Meteorological Office, £46,000; messengers, porters, etc., £22,773; contingent expenses, £1,600; gross total, £711,000; appropriations in aid, £1,000; net total, £710,000.

The non-effective services, Vote 11, are estimated to require £133,000, the subheads under which these expenses occur being:—Rewards to officers, warrant officers, non-commissioned officers, and airmen; half-pay of officers; service and disability retired pay and gratuities of officers; pensions and gratuities to wounded officers; service and disability

pensions to warrant officers, non-commissioned officers, and airmen; pensions, gratuities and allowances to widows; children, etc.; civil non-effective payments, recurrent charges, gratuities and other non-recurrent charges; injury grants; commutation of retired pay, wounds pensions, etc.; relief fund.

### MEMORANDUM BY SECRETARY OF STATE FOR AIR

THE form of air estimates has been changed by the addition of two new votes (for medical and educational services) in accordance with a recommendation of the Public Accounts Committee. These two votes are numbered 5 and 6, and a consequent re-arrangement of other votes has taken place. For purposes of comparison between the years 1923-24 and 1924-25 the votes of the former year have been re-arranged in conformity with the new classification.

The gross total of air estimates now presented is £19,392,000, and the net total is £14,511,000, an increase of £787,000 gross and £2,500,000 net over the corresponding totals for the current year.

The provision for war liabilities is £185,000, as compared with £525,000 in the current year, a decrease of £340,000. The increase on other services is consequently £1,127,000 gross and £2,840,000 net. The difference between these two figures is mainly due to a decrease in the cost of the Air Force and ancillary services in Iraq and Palestine of over £1,300,000, which affects the gross but not the net figure of air votes.

The effective increase of £2,840,000 on net air estimates is to be attributed to the progress of the approved expansion of the Air Force for home defence, to the increased requirements of Navy and Army co-operation, and to the replenishment of the stocks of technical equipment and other material which were originally a legacy of war production, and have hitherto sufficed for the requirements of the Air Force with comparatively little need for replacement.

Eight new regular squadrons for home defence will be completely formed during 1924-25, which will bring the number allotted for that purpose to 18 by April, 1925; provision is also made in the estimates for the initial equipment of six more squadrons, which under present arrangements will be formed in 1925-26.

The air units working with the Navy will be increased by five flights, these additions being due partly to the increased number of aircraft carriers and partly to the provision of aircraft for embarkation in capital ships and cruisers.

The strength of the air units working with the Army at home will be increased by the equivalent of one squadron.

Vote A (numbers) is increased by 2,000 to 35,000. The formation of new units is being accompanied by a close scrutiny of establishments, and every endeavour is being, and will be, made to employ the personnel in the most economical way. The increase on Vote 1 (pay) is small, but a considerable increase of cost in later years will be unavoidable as the programme develops. The approximate total numbers involved in completing the approved scheme of expansion for home defence will be 40,000, but this figure will not be reached for some years.

Provision is being made under Vote 7 for the inauguration of the Auxiliary Air Force and the Special Reserve. As already announced, legislation is being introduced to enable these forces to be set up, and when it is passed it is intended to proceed with the formation of squadrons additional to the 18 regular squadrons for home defence, which, as stated above, are to be ready by April, 1925.

An extensive scheme of land purchase and building is an unavoidable concomitant of the expansion of the Air Force. The increased provision in Vote 4 for this purpose is considerable, but the greater part of the charge for the enlarged programme of works will fall on subsequent years. In order to provide for the increase of skilled mechanics which will be necessary, an additional wing of the Aircraft Apprentices'

Training Establishment at Halton is being erected, which will provide for another thousand under training in addition to the two thousand for whom accommodation already exists.

The largest individual increase is on Vote 3 (technical equipment and research). The reconditioning of existing machines and engines is being continued, so far as it is judged to be both economical and compatible with efficiency; but it is proposed to equip new squadrons (including the additional units for co-operation with the Navy) with new-type machines. In this connection it is of the utmost importance that there should be no relaxation of activity in experiment and research, and increased provision has been made for this purpose. I am hopeful that the utility of this work will be further increased by the decision, announced by my predecessor, to separate the supervision of the more purely scientific research from that of technical development.

Provision is made under Vote 8 for continuing the assistance hitherto granted towards the maintenance of air transport services, but the sum required shows a considerable diminution owing to the projected absorption of the four existing companies into a new Imperial Air Transport Company, which is on the point of formation. The terms of the agreement with this company have already been published in a White Paper.

Notwithstanding this decrease, the civil aviation vote as a whole shows an increase of £68,000, due to the contemplated extension of Croydon Aerodrome and the establishment there of an up-to-date air port, in accordance with the recommendations of the Civil Aviation Advisory Board.

No provision is made in these estimates for the development of airships. The matter is under active consideration by the Government, and their decision will be communicated to Parliament in due course. Any necessary provision of funds will be made by means of a supplementary estimate.

Vote 10 (Air Ministry) shows an increase of £62,000, which is due mainly to additional staff being required in the Works Department in connection with the land and building programme of the home defence scheme; additions to the staff of the Personnel and Organisation branches have also been found necessary for the working out and administration of that scheme. It may be remarked that several of the additional appointments thus created have been filled by Army officers whose services have been obtained by the co-operation of the War Office.

A considerable reduction of the strength of the Air and other Forces in the Middle East has been made during the current financial year, and, as already mentioned, further decreases are in contemplation. The result will be to reduce from £5,040,800 to £3,708,850 the contribution to be made by the Colonial Office from the Middle East vote to air votes, in respect of the cost of the Air Force and ancillary services. Of this contribution £3,091,850 will be in respect of Iraq and £617,000 in respect of Palestine and Transjordan.

A warning should be given that as the Air Force expands in accordance with the approved programme, and as war stocks of equipment become obsolete, the total of air estimates must be expected to rise for some years. I may, however, point out that during the period of expansion the annual estimates will bear the capital cost involved in the provision of land and buildings and the first equipment of the new squadrons, and that therefore (unless further expansion is imposed on us) part of the increase will not be recurrent.

(The Air Estimates can be obtained from H.M. Stationery Office (3s.), as can also the Memorandum, Cmd. 2070 (2d.).—ED.)

### Aviation in the Army Estimates

In his memorandum to the Army estimates the Secretary of State for War makes the following reference to air defence troops:—

"The peace establishment of the Territorial Army (exclusive of Permanent Staff), which in 1923-24 stood at 180,213 (7,956 officers and 172,257 men), is raised for 1924-25 to 185,554 (7,955 officers and 177,599 men), practically the whole increase being due to the growth of air defence troops. During 1924-25 it is intended to raise additional units of such troops, to an establishment of 126 officers and 2,729 other ranks, as the first instalment of an increase rendered necessary by the expansion of the Royal Air Force which has already been decided on. These troops

are complementary to the air units, and are essential to the full development of their powers of defence.

"Owing to the fact that air defence troops must be prepared to offer effective resistance to attack immediately on the beginning of hostilities, it is necessary that their peace establishments shall be regulated by the demand which would then be made on them. The establishments of the two existing air defence brigades will therefore be raised from the general peace proportions of about 80 per cent. of the officers and 60 per cent. of the men on the war establishment, to the full war establishment. The increase under this head amounts to 20 officers and 2,490 other ranks, and endeavours will be made to recruit up to the full establishment during the year."





# THE ROYAL AERO CLUB OF THE U.K.

## OFFICIAL NOTICES TO MEMBERS.

### NOUVELLE COUPE MICHELIN (International Contest)

*Under the Regulations of the F.A.I. and the Aero Club de France*

Prizes : 100,000 francs (20,000 francs per annum for five years)

#### General Regulations

**Article 1.**—Messrs. A. and E. Michelin have instituted an aviation contest called the *Nouvelle Coupe Michelin*, for which they are presenting prizes amounting to 100,000 francs.

They have entrusted the drawing up of the regulations for this cup to the Commission d'Aviation of the Aero Club de France. The regulations will consist of general regulations and special regulations.

The special regulations for the year 1924-25 will be published before June 1, and for the other years before March 1. They must be ratified each year by the donors.

**Article 2.**—The contest is international. It will be held over French territory.

**Article 3.**—The winner of the cup will be the pilot of the machine (aeroplane with engine, Class C) which shall have achieved the best performance, in accordance with the regulations, in the 12 months July 1-June 30.

No pilot may compete unless he is a member of a national federation of the Fédération Aéronautique Internationale.

**Article 4.**—The winner of the annual contest will receive a sum of 20,000 francs and a replica in bronze of the cup by Moreau-Vauthier.

**Article 5.**—If the cup is not won in any one year the sum of 20,000 francs will be divided amongst the outstanding contests.

#### Special Regulations for 1924-25

**Article 1.**—The winner of the cup for the year 1924-25 will be the pilot who, in accordance with the general and special regulations, has covered at the greatest commercial speed the course in a closed circuit defined below.

The cup will, however, only be awarded if the commercial speed over the whole circuit is at least equal to that attained by the winner of the cup for the year 1923-24.

The commercial speed is arrived at by dividing the total length of the course by the time which elapses between the departure of the aircraft from its starting-point and its return to the same point.

**Article 2.**—The closed circuit, called the "Tour de France,"

will include fifteen landings, to be made on each of the landing grounds of the following towns:—Paris (Le Bourget), Saint-Inglevert, Valenciennes, Mourmelon, Metz (Frescaty), Strasbourg (Neuhof), Dijon (Longvic), Bourges (Avord), Clermont-Ferrand (Aulnat), Lyon (Bron), Nîmes (Courbessac), Toulouse (Latécoère Aerodrome), Pau (military aerodrome), Bordeaux (Teynac), Angers (Avrillé), Paris (Le Bourget).

Competitors may start at any one of the aerodromes mentioned and finish at the same aerodrome, the landings being made in the order given above, or *vice versa*.

The landings will be verified by a log-book which will be forwarded to each competitor on entering. On arriving at a landing-place the competitor must have his log-book signed by an official or by two witnesses of the landing.

**Article 3.**—The Commission d'Aviation reserves to itself the right to alter the course defined in Article 2, if circumstances render this necessary. Except, however, when there is no alternative, the course may not be altered when it has been properly completed by a competitor.

**Article 4.**—Intermediate landings, replenishments, and repairs are allowed. Changing the machine is not allowed.

The crank-case and cylinders of the engine will be sealed or stamped. The fuselage and wings of the machine will also be stamped.

**Article 5.**—The entry signed by the pilot must reach the Commission d'Aviation, Aero Club de France, 35, Rue François 1er, Paris, not later than 6 p.m. two days before that indicated for the start. Sundays and holidays are not included in this interval. Entries may not be received on Sundays or holidays. The entry must indicate the starting-point selected and the date of starting.

The entry fee, which is not returnable, is 100 francs. The entry is valid for all starts made during four consecutive days, the first of these four days being indicated in the entry. During this period the pilot may make as many starts as he wishes, but they must always be made from the place indicated in the entry.

The "Nouvelle Coupe Michelin" was won in 1923 by Capt. Girier on a Breguet 14A.2, 300 h.p. Renault, at a commercial speed of 136.211 kms. per hour. The course was completed in 21 hrs. 49 mins. 45 secs.

Offices: THE ROYAL AERO CLUB,  
3, CLIFFORD STREET, LONDON, W. 1.

H. E. PERRIN, Secretary.

## PERSONALS

### Married

Flight Officer FREDERIC ALAN PUMPHREY, R.A.F., son of Mr. and Mrs. F. Pumphrey, of Vancouver, B.C., was married on March 4, at Christ Church, Sunderland, to MURIEL, daughter of the late T. E. PUMPHREY, J.P., and of Mrs. Pumphrey, of Mayfield, Sunderland.

### To be Married.

THE marriage arranged between JAMES BURNEY BARRETT, R.A.F., youngest son of Mr. and Mrs. Arthur Barrett, late of Padstow, Cornwall, and JOAN MARGARET HEXTALL, youngest daughter of Mr. and the late Mrs. Henry Hyde Hextall, of 24, Cottesmore Gardens, London, W.8, will take place at St. Mary Abbots, Kensington, on March 25, at 12.30 p.m.

The marriage arranged between the Hon. MONICA GREENFELL, eldest daughter of Lord and Lady DESBOROUGH, and Air-Marshal Sir JOHN SALMOND will probably take place on June 2. Lady Desborough and her two daughters leave Cairo shortly with Sir John Salmond for a short tour in Palestine.

The engagement is announced between Flight-Lieut. R. DE HAGA HAIG, R.A.F., son of Colonel H. de Haga Haig, late R.E., and Mrs. Haig, and VALÉRIE, daughter of Mr. and Mrs. ROBERT HUDSON, of Westwood, Tuxford, Notts.

The engagement is announced, and the marriage will, shortly take place, between Squadron-Leader H. G. SMART, O.B.E., D.F.C., R.A.F., and DORIS, eldest daughter of

Capt. F. CORKE, R.E., and granddaughter of Sir John Corke, K.L.H., of Portsmouth.

### Killed

Flight-Lieut. GEORGE HOWARD HOMER SCUTT, M.C., R.A.F., who was recently killed in an accident when flying at Hawking, Folkestone, was the eldest son of G. DECIMUS HOMER SCUTT, of Creywell, New Ross, Ireland.

### Items

H.M. the King held an Investiture at Buckingham Palace on March 6, when the following were invested by His Majesty with the Insignia of the respective Divisions of the Order into which they have been admitted:—

*Order of the Bath (Military Division)*

*Knight Grand Cross.*—Air Chief Marshal Sir Hugh Trenchard, Bart.

*Companion.*—Air Commodore David Munro.

Lieut.-Aviateur W. COPPENS, Air Attaché at the Belgian Embassy, who has been in Belgium for several weeks, has now returned to London.

The following appointment is announced by the War Office:—Col. E. F. CRESWELL, D.S.O., to be Commandant, Class T., Anti-Aircraft Defence School, *vice* Col. M. St. L. Simon, C.B.E., retired.

### Belgian Competition for Touring Machines

THE regulations have now been fixed for the fourth International Competition for Touring Aeroplanes organised by the Ae. C. of Belgium, for the challenge cup presented by the King of Belgium and cash prizes. The exact date of this event has not yet been fixed, but it will be held some time in June. The regulations, etc., remain the same as before. This competition is open to single-seater or multi-seater touring machines whose engine capacity does not

exceed 7 litres. The course will be over 300 kms., with two stops or landings. Awards are made for a total of 100 points, allotted as follows:—(a) 30 points for minimum of space occupied in the hangar; (b) 30 points for general economy of the engine; (c) 25 points for slow landing; (d) 15 points for quick get-off. The prizes comprise the King of Belgium's challenge cup, challenge cup "Tourisme aérien," and first prize, 8,000 frs., second prize, 5,000 frs., and third prize, 2,000 frs.

# THE ROYAL AIR FORCE

London Gazette, February 29, 1924

## General Duties Branch

Air Vice-Marshal F. R. Scarlett, C.B., D.S.O., is placed on half-pay, Scale A (March 1); Flt. Lieut. R. F. L. Dickey, D.S.C., is placed on half-pay, Scale B (Jan. 24) (substituted for notification in Gazette of Feb. 15).

London Gazette, March 4, 1924

## General Duties Branch

The follg. Flight-Lieuts. are granted permanent commns. in the ranks stated (March 5):—R. H. G. Neville, M.C., F. Wright. H. C. Lee is granted a short service commn. as Flying Officer, with effect from, and with seny. of, Feb. 20. Pilot Officer T. A. Verney-Cave is promoted to rank of Flying Officer; Dec. 11, 1923. Flying Officer D. Maclaren resigns his short service commn. and is permitted to retain his rank; March 5. The follg. are restored to full pay from half-pay:—Air Commodore L. E. O. Charlton, C.B., C.M.G., D.S.O.; March 7. Flight-Lieut. C. L. King, M.C., D.F.C.; Feb. 25.

## Stores Branch

C. E. Norris, O.B.E. (Capt. I.A.R.O.) is granted a short service commn. as Flight-Lieut. for three years on the active list, with seny. of Oct. 24, 1922; Jan. 28.

The follg. are transferred to Stores Branch on probation from General Duties Branch (Dec. 10, 1923):—*Flying Officers*.—P. H. Burt, W. T. Lewis, G. Scarrott, E. A. Burridge, J. Davison. *Pilot Officers*.—C. W. Gore, M. W. Keey.

## Medical Branch

R. H. Stanbridge is granted a short service commn. as Flying Officer, with effect from, and with seny. of, Feb. 19. Flight-Lieut. J. C. T. Fiddes, M.B., is transferred to Reserve, Class D 2; March 6.

## Reserve of Air Force Officers

The follg. are granted commns. on probation in General Duties Branch in the ranks stated (March 4):—

*Class A.—Flying Officers*.—O. M. Baldwin, D.F.C., G. Clapham, A.F.C., C. J. Clark, A. G. Cooper, J. E. L. Skelton, G. M. Stephenson. *Pilot Officers*.—T. W. Ashton, G. C. F. Ely, J. Hall, S. Plowman, T. A. Priestley, G. O. Wood.

*Class A.A.—Pilot Officer*.—F. Dismore.

*Class B.—Flying Officer*.—R. C. Williams, M.C. *Pilot Officer*.—G. Goodall. Flight-Lieut. J. C. Atkinson is transferred from Class C to Class B; Feb. 7. Flying Offr. C. G. Ferrell is transferred from Class A to Class C; Jan. 31.

The follg. offrs. are confirmed in rank, with effect from dates indicated:—*Flying Officers*.—E. A. Cherry, J. L. Mayer, D.F.C.; Feb. 8. H. V. Barker, F. W. Hartridge, A.F.C., R. D. Leigh-Pemberton, M.C.; Feb. 9. W. B. Kelly, R. W. Reeve, D.F.C., M.M.; Feb. 28. W. H. Farrow, D.F.C.; March 4. *Pilot Officers*.—A. Cairnie; Feb. 16. J. P. Crawford, L. R. Robertson; Feb. 19. L. Motley; Feb. 20. R. T. Bark; Feb. 27.

## Erratum

Gazette, June 3, 1919 (FLIGHT, June 19, 1919, p. 823): for 115535 Cpl. W. Bingley, read 115535 Cpl. W. Binley.

## ROYAL AIR FORCE INTELLIGENCE

**Appointments.**—The following appointments in the Royal Air Force are notified:—

### General Duties Branch

*Wing Commander* W. L. Welsh, D.S.C., A.F.C., to H.M.S. *Eagle*, to command R.A.F. Unit. 26.2.24.

*Squadron Leaders*: A. J. Currie, to Aircraft Depot, Egypt. 1.2.24. D. Iron, O.B.E., to R.A.F. Depot, on transfer to Home Estab. 20.2.24. E. R. Pretymann, A.F.C., to H.M.S. *Eagle*. 26.2.24.

*Flight Lieutenants*: C. A. Stevens, M.C., to remain at No. 1 Schl. of Tech. Training (Boys), Halton, instead of to R.A.F. Depot, as previously notified. C. L. King, M.C., D.F.C., to No. 4 Sqdn., S. Farnborough. 25.2.24. C. R.

Richardson, to R.A.F. Depot. 7.3.24. D. K. Cameron, to H.M.S. *Eagle*. 26.2.24.

*Flying Officers*: F. W. Sinclair, D.F.C., to No. 4 Sqdn., S. Farnborough. 5.2.24. C. L. Lowe, D.F.C., to Aeroplane Experimental Estab., Martlesham Heath. 15.3.24. C. S. Whellock, to No. 14 Sqdn., Palestine. 20.2.24. H. J. Brown, to No. 5 Sqdn., India. 21.1.24. A. C. Tremellen, to R.A.F. Depot, on appointment to a short service commn. 26.2.24. B. I. Carter and H. W. Beck, to H.M.S. *Eagle*. 26.2.24. G. D. B. Russell, to Sch. of Army Co-operation, Old Sarum, on transfer to Home Estab. 30.3.24. D. G. Brodie, to Signal Co-operation Flight, Kenley, on transfer to Home Estab. 18.3.24. B. G. Pool, to No. 207 Sqdn., Eastchurch. 4.3.24.

## IN PARLIAMENT

### Mail Service (Western Isles).

MR. MACKENZIE LIVINGSTONE on February 28 asked the Under-Secretary of State for Air whether he will inquire into the possibility of a postal air service for the Western Isles of Scotland?

MR. LEACH: I am afraid the postal traffic concerned would not justify expenditure upon an air mail service as suggested.

### R.A.F. and Unofficial Insignia.

MAJOR HORE-BELISHA asked the Under-Secretary of State for Air whether he is aware that service members of the Loyal Orange Institution of England are not permitted to wear the regalia of their order when attending in uniform any lodge or demonstration; and whether he can see his way to alter the regulations so that they may be permitted to do so?

MR. LEACH: The wearing of any unofficial insignia on uniform is not permissible, and the Air Ministry see no reason to modify this rule.

### Medical Examination.

LIEUT.-COLONEL RUPKIN asked the Under-Secretary of State for Air if he is aware that candidates for the Air Force, after they have successfully passed the necessary examinations, are reviewed by the medical authorities and in some cases rejected; and, in view of the hardship created and the time and money wasted, will he take steps to ensure that the medical examination shall be held prior to the written or oral examination?

MR. LEACH: The answer to the first part of the question is in the affirmative. The possibility of holding the medical examination prior to the examination conducted by the Civil Service Commissioners was carefully considered recently, and the conclusion arrived at was that the disadvantages outweighed the advantages. I may add that this opinion was shared by the headmasters who were consulted by the departments. Parents and guardians are strongly recommended in the regulations to have their sons or wards examined by a medical practitioner or by a Royal Air Force preliminary medical board previous to their becoming candidates for commissions in the Royal Air Force, and full details of the medical standards are published in the regulations. If my hon. and gallant friend's question refers to candidates for aircraft-apprenticeships as well as to cadets, I may add that the same reasons for holding the educational examination first are applicable to their case.

### Commercial Airship Company

VISCOUNT CURZON on March 3 asked the Prime Minister whether he is aware that the negotiations between the Government and the Commercial Airship Company were almost completed when he took office; and whether, in view of the delays that have already taken place, he can give an assurance that a decision will be given upon this matter without further delay?

THE PRIME MINISTER: Yes, sir. I am aware that the negotiations referred to had reached an advanced stage when the present Government took office. The stage reached, however, was not so far advanced that His Majesty's Government would be justified in presenting the scheme to Parliament unless they were satisfied regarding its provisions. For that purpose, the scheme is now being examined.

### R.A.F. and Navy

COMDR. BELLAIRS on March 5 asked the Parliamentary Secretary to the Admiralty whether, in the event of it being decided to hand over the Air Forces and their personnel associated with the Fleet to the Navy, it will be considered whether economies in personnel and material could be effected through the use of existing naval resources?

MR. AMMON: The question is hypothetical. His Majesty's Government have no intention of re-opening a question which has already been decided after the most exhaustive inquiries by the preceding Government.

### Naval Estimates and Aviation

COMDR. BELLAIRS asked the Parliamentary Secretary to the Admiralty whether any part of the Navy Estimates is due to the requirements of naval aviation; and if he can state the amount in the Estimates for 1923-24?

MR. AMMON: Apart from the expenditure connected with the naval aircraft carriers and the cost of the air section of the naval staff, which are presumably not in mind, no part of the net total of Navy Estimates is due to the requirements of naval aviation. A small amount of expenditure is

incurred by the Admiralty on behalf of the Air Ministry, but this is recovered from the Air Ministry and credited to Appropriations-in-Aid.

### R.A.F. Flying Hours

LIEUT.-COMDR. KENWORTHY on March 6 asked the Under-Secretary of State for Air whether there are any regulations laying down the number of hours of actual flying per month that must be done by each member of the flying personnel; and how many hours' actual flying per month is actually done by the flying personnel?

MR. LEACH: The answer to the first part of the question is that there are no regulations laying down the number of hours' flying. Every officer of the General Duties Branch, up to and including the rank of Wing Commander, whose medical category indicates that he is fit for flying, is required to keep himself in regular flying practice so far as the circumstances of employment and station permit. An air officer, or other officer commanding, is required to take such steps as are possible to enable officers to obtain a certain amount of flying each month, but it is not possible or desirable to lay down any regulation for any fixed number of hours. The second part of the question could only be answered satisfactorily by giving the number of hours flown by each individual pilot, which is clearly impracticable. Any figure representing the average number of hours per pilot is very misleading, since it includes those who are employed on work on the ground and carry out only sufficient flying to keep their hand in, as well as those who are engaged on full-time flying duties, but, for what it is worth, I may say that the average during 1923 was six hours per month. This figure will, of course, materially increase as the number of squadrons increases and as the proportion of officers employed on full-time flying duties increases as compared with those employed chiefly on ground duties.

### Training Schools Accidents

CAPT. BERKELEY asked the Under-Secretary of State for Air whether he will make a statement accounting for the frequency of accidents at Royal Air Force training schools; whether he is satisfied that all possible precautions against accidents due to inexperience are taken at these training schools; whether the accident at Duxford on Monday was due to a collision in the air; whether there are regulations in force governing the simultaneous landing of aeroplanes; if so, whether these regulations were complied with in this case; whether his attention has been directed to the fact that the machine at the Biggin Hill accident was trick-flying in connection with films being prepared for the Empire Exhibition at Wembley; and, if so, by whose authority Air Force pilots are required or permitted to expose themselves to additional risks for purposes connected with a commercial enterprise?

MR. LEACH: The answer to the first part of the question is that accidents at Royal Air Force training schools are not unduly frequent. The number of fatal accidents per hour flown is decreasing, and it is confidently anticipated that it will continue to decrease. The answer to the second and third parts of the question is in the affirmative.

The answer to the fourth part of the question is that such regulations are contained in Air Ministry Weekly Orders. In addition to this, each unit has standing orders drawn up to suit the conditions of its aerodrome. The regulations state that the commanding officer of a unit will satisfy himself that all pilots are acquainted with the regulations in orders and instructions relating to flying, and also that every local or temporary order relating to flying is to be conspicuously posted up in every shed from which flying takes place. I cannot answer the fifth part of the question until the investigation which is at present in progress has been completed.

The answer to the sixth part of the question is that part of the training of all fighting and bombing pilots consists in perfecting themselves in the manoeuvres of air fighting. This is not stunting, as suggested in the question. It is the ordinary, everyday training of a war pilot, without which he would be useless in war. On the occasion of the flight during which Flying Officer Smith was killed, he had been practising the manoeuvres of an air fight between a single-seater fighting aeroplane and a night bomber. A film operator had been taken up in another aeroplane in order to take a film of this practice for exhibition at the British Empire Exhibition at Wembley, in order to show the training carried out in the Royal Air Force. In view of this the last part of the question does not arise.



# Helicopters

CAPT. BRASS asked the Under-Secretary of State for Air whether any entries have been made for the helicopter competition announced in 1923; and, in the event of no entries having been yet made, whether he intends to proceed with the competition?

Mr. Leach: One entry has been received for the competition referred to, but it is possible that more will be received by April 30, 1924, the date of closure of entries. It will be seen that the contingency referred to in the latter part of the question has not arisen.

CAPT. BRASS asked the Under-Secretary of State for Air whether he can make a statement as to the progress made with the helicopter at Farnborough; how long the experiments have lasted; what is their cost; and whether he is satisfied that further expenditure in this direction is profitable?

Mr. Leach: In answer to the first part of the question, only indoor tests have been carried out with the helicopter up to the present, but the results which have been obtained indicate that the design is of distinct promise. Certain features of the machine are now in process of modification, and until this work has been completed outdoor tests cannot be undertaken. In answer to the second part, the work has been in progress at Farnborough since June, 1919. In answer to the third part, the cost of the work, including expenditure upon salaries, wages and materials, is approximately £45,500 up to the end of February, 1924. As regards the last part, the question of further expenditure will be considered when outdoor trials have been held.

## Government Policy and a Separate Air Force

BRIG.-GEN. SPEARS asked the Under-Secretary of State for Air when he will make a statement to the House as to the relation of the Air Force to

the Army and Navy, and as to what decision has been come to by the Air Ministry as to the maintenance of an independent Air Force?

Mr. Leach: The need for the maintenance of an independent Air Force has been accepted by successive Governments, and is not in question. Its relation to the Army and Navy, and particularly to the latter, was recently re-defined after a special and exhaustive inquiry, and the present Government is not proposing to reopen the matter.

## Wireless Operators

MR. GILBERT asked the Under-Secretary of State for Air whether his Department are increasing the number of wireless operators for use on aeroplanes; how many are wanted immediately; what salaries are offered for the position; and what special efforts are being used to obtain the men required?

Mr. Leach: Steps are being taken to increase the number of wireless operators in the Royal Air Force to meet the requirements of the new squadrons which are to be formed. For this purpose, and also for providing replacements for personnel transferred to the Reserve, 220 wireless operators are required between now and April 1, 1925. The daily rate of pay offered is from 3s. 9d. to 5s. 2d., according to the operator's skill, and in addition marriage allowance is admissible for married men over 26 years of age, and free accommodation, food, and clothing are provided. Advertisements are inserted periodically in suitable daily and weekly newspapers, and close liaison is maintained with civilian wireless schools and shipping companies. When requirements are not met by these means, suitable unskilled men are enlisted in the Royal Air Force for training in these duties.

# AIRCRAFT MANUFACTURING CO., LTD.

A GENERAL meeting of the members of the Aircraft Manufacturing Co., Ltd. (in liquidation), was held on March 6 at Winchester House, E.C., "for the purpose of receiving an account of the acts and dealings of the liquidator."

Sir William B. Peat (the liquidator), who presided, said that at their last meeting, on February 28, 1923, he reported that the receiver was still in possession, £120,000 being due to him in respect of the first mortgage debentures. He also expressed the hope on that occasion that by the time they met again that sum would be cleared off. It had, in fact, been cleared off. All the debentures were paid, and whatever now remained of the assets of the company the creditors and shareholders alone were interested in. The receiver, however, still remained in possession, because he had not been formally discharged by the Court; but he recognised that position, and that he (Sir William), in his capacity as liquidator, was now the interested party. Hence, in all realisations that might take place he would have the final word as to the sum to be received for any property.

The receiver had sent him a statement of receipts and payments from January 1 to December 31, 1923, showing a balance in the receiver's hands of £1,500. Continuing, Sir William said it was fortunate that at the last meeting he did not hold out too great expectations as to the result of the claim, heard before the Royal Commission, of the Aircraft Company in connection with the user of their machines by the Americans in war time. Eminent counsel were employed on both sides, and the witnesses included Mr. Holt Thomas, Lord Weir and Sir Hugh Trenchard, who was at the head of the Air Department, each of whom gave evidence on behalf of the Aircraft Company. He did not think any stone was left unturned to secure what they hoped and believed would be a very substantial award in their favour. As a matter of fact, they got £65,000. They ought to have got £650,000. The British Government apparently had indemnified the Americans against any claim by the Aircraft Company for the user of their machines, but they had not indemnified the Americans against the post-War user of the machines. The Americans had 17,000 of those machines in their domestic service, quite apart from the machines they had used in war time. The award not only covered the Aircraft Company's claim in war time; it also covered their claim in peace time. The result was that the Americans had the right to use those 17,000 machines without any payment to the company. The company had received no assistance from the British Government, but he had no complaint to make in regard to the proceedings of anyone connected with the matter. He was perfectly convinced that the Commission, as a judicial body, was absolutely free from bias, but he did make the assertion that the result of the award was an intense disappointment.

Referring to assets which he described as "visible," as distinct from "problematical," Sir William said they had sold block "C" for £65,000, and that money had yet to come in; in fact, they had visible assets already forming the subject of contracts for sale, in respect of which the money had not actually been received, amounting to £85,050. They had also property remaining to be realised, including a small factory, known as block "B," which was now in the hands of Fuller, Horsey and Co. for sale. They had about 20 acres of freehold land producing £900 a year, but what that would fetch he did not know.

Coming to the subsidiary companies, some of those, Sir William said, had been entirely liquidated. He proposed to deal with those not yet entirely liquidated. The liquidator of Airships, Ltd., had realised and distributed all the assets, but the company had a claim against the Government in respect of airship designs. The Aircraft Company—that was themselves—were the sole shareholders in that concern, therefore whatever was recovered from the Government would be for their benefit. The Camden Engineering Company had been sold to people who paid £1,500 on account and still owed £3,500. Trade had been rather bad, and exactly when they would get that £3,500 he was not prepared to say, but they had a debenture to cover it. As to the Integral Propellers—the only asset of that company was a factory adjacent to the Aircraft premises. The factory had been sold for £9,000, and there remained in the hands of the liquidator of that company £8,639, which it was believed would be available for the payment of a dividend by the Propellers Company. Practically the whole of that would come to the Aircraft Company, who were almost the only people interested in it. Peter Hooker was a huge concern, and it was in liquidation. The liquidators were carrying it on, because they considered that a better way to effect a reasonable realisation. The Aircraft Company, in addition to being interested in the ordinary or deferred shares, claimed to be creditors for £47,000, but that claim had not been admitted. The debentures, which amounted to £250,000, had been paid off to the extent of £100,000. It was a place where enormous sums of money had been spent, and one would ordinarily think there ought to be more there than sufficient to cover the outstanding £150,000 debentures. To the extent that the assets exceeded that, the Aircraft Company, as creditors for whatever sum they might be permitted to rank, would be entitled to a share of those assets. With regard to the Roe Green Garden Village, there they had very serious difficulties with the Government. A valuation of the houses had been made, but the award of the valuers had not yet come to hand.

In conclusion, Sir William said it would be gathered from his observations that they had in view a clear £85,000; they had an award, which must come in within a fortnight, the amount of which it was impossible to state; they had a fair amount of property remaining to be sold, including 20 acres of land; and they had considerable sums still to come in (with any kind of luck) from the subsidiaries. He was not, however, going to make an estimate of what there was to come in. The claims in front of the shareholders were considerable. There were the short-term notes for £250,000, and there were other unsecured claims which might be put at approximately £160,000; that was £410,000, which was bound, he thought, to come before the shareholders. Some of those present, no doubt, were noteholders, some were probably creditors, and some might, unfortunately, only be shareholders, and it was impossible to say what their prospects might be.

In another twelve months a lot of doubtful things would be cleared out of the way, and it might then be possible to see what the financial prospects were as far as the Aircraft Company was concerned.

There was no resolution to submit, and, after the Chairman had replied to one or two questions, the proceedings terminated.

## THE ROYAL AIR FORCE MEMORIAL FUND

A MEETING of the Executive Committee was held at the offices of the Fund, 7, Idlesleigh House, Caxton Street, on March 5. Lord Hugh Cecil was in the chair, and the following members were present:—Dame Helen Gwynne-Vaughan, Mrs. Barrington-Kennett, Mrs. L. M. K. Pratt-Barlow, Sir Charles McLeod, Air Vice-Marshal Sir A. V. Vyvyan, Air-Commodore A. E. Borton, Mr. W. S. Field.

A very large amount was approved as having been distributed during the past month in various matters of relief, the total amounting to £1,122 19s. 6d., of which £500 was concerned with a grant made by the Fund to the Council of the Enham Village Centres, who with that sum are erecting a cottage at the Enham Village Centres, near Andover, Hants, which will be always available for the occupation of an ex-airman who may be in training at the Enham Village Centres, either now or in the future; and in this respect, a letter of warm thanks was read from Lord Henry Bentinck, Chairman of the Executive Committee of the Village Centres.

The Committee accepted, with much regret, the resignation of his membership by Air Vice-Marshal J. F. A. Higgins, C.B., who is about to give up the command of the Inland Area of the R.A.F. at Uxbridge, and who is shortly proceeding to take over command of H.M. forces in Iraq in succession to Air-Marshal Sir John Salmond, who is shortly arriving home.

The Chairman of the Grants Sub-Committee reported that at the two meetings of that Sub-Committee which had taken place since 6th February 60 cases had been considered, and the Secretary reported that in the same interval he had himself dealt with and made grants in 14 cases.

It was decided to ask Air-Commodore T. I. Webb-Bowen, C.B., who is shortly taking up the command of the Inland Area, R.A.F., to join the Executive Committee in the room of Air Vice-Marshal Higgins.

## AIR SERVICES RE-UNIONS AND FUNCTIONS

*Announcements for this column are invited, and inserted without charge.*

March 8.—The R.A.F. India Command Re-union Dinner took place at the Savoy Hotel.

The chair was taken by Air Vice-Marshal Game, who was supported by Air-Commodore Webb-Bowen, Group-Capt. Mills, Wing-Commanders Breese, Whitelock, Barton, Smythies, Tyssen, and Sqdn.-Ldrs. Durston, Sherren, Russell, Tweedie, de Crespigny, Glenney, Graham, O'Neil and Cox. About 60 officers were present altogether.

The toast of "The King-Emperor" having been honoured, Air Vice-Marshal Game made a short speech in which he referred to the desirability of making the dinner an annual event and to the question of including ex-officers of the R.A.F. who had served in the India Command.

On a show of hands it was decided by a large majority to make the dinner an annual one and to admit R.A.F. (India) ex-officers.

Air-Commodore Webb-Bowen referred to the satisfactory response to the dinner, and hoped that a still greater number would attend next year. He proposed a vote of thanks to the Chairman, which was carried with acclamation.

At the conclusion of the speeches the assembly adjourned to the reception-room, where the rest of the evening was spent in informal reunion. Air Vice-Marshal Sir Geoffrey Salmond was present after dinner.

When the gathering broke up it was unanimously agreed that the evening had been a very good "show."

March 29.—28th Squadron (R.A.F.) Old Boys' Association. A social evening, comprising a whist drive and dance, will be held, in connection with the above Association, at Shearn's Restaurant, 231, Tottenham Court Road, W. 1, commencing at 6 p.m. sharp. Tickets (including refreshments, 3s. single, 5s. 6d. double) may be obtained from C. T. Hodges, Hon. Sec., 102, Camden Street, N.W. 1.

## A National Seaplane Club

PLANS are progressing toward the formation of a National Seaplane Club, which will probably materialise into an aerial counterpart of Cowes and its yachting activities. We hope next week to give full details of this enterprise, but at the moment we can only mention that, through the co-operation of the Lord of the Manor of Selsey, it is proposed to establish headquarters at Pagliam Harbour, near Selsey Bill, on the Sussex coast, and that many well-known names are already associated with the Club, such as Lord Birkenhead, the Earl of Drogheda, Admiral Sir E. Fremantle, Admiral Mark Kerr, Gen. Brian Mahon, Gen. Seely, etc., while Mr. H. F. Smalman-Smith is responsible for the organisation, etc., of the Club.

## A Water Test for Land 'Planes

AN interesting experiment is to be carried out shortly by the R.A.F. One of the old D.H.18 cabin machines (450 Napier "Lion"), with ballast-weight equivalent to eight passengers, will be flown out to sea off Felixstowe and a descent made on the water. A boat standing by will rescue the pilot, and the machine will be left floating on the water, accurate observations then being made as to the behaviour of the machine and the length of time it will remain afloat. After the test the engine will be salvaged.

## International Air Navigation

ON March 6 last, the International Commission for Air Navigation concluded a series of meetings at which a number of practical problems concerning the regulation of air services were considered.

M. P. E. Flandrin, formerly the French Under-Secretary for Aeronautics, one of the French delegates, presided at the meetings. Sir W. Sefton Brancker was the British delegate, and other countries represented were Belgium, Italy, Japan, Portugal, Greece, Yugoslavia, Czechoslovakia, and Siam. Among the questions discussed were:—The regulations covering the minimum qualifications for the granting of airworthiness certificates; the use of wireless telegraphy; the publication of maps for aerial navigation; medical conditions and aptitude for air navigation; the uniformity of "ship's papers" for aircraft; uniformity of types, of airworthiness rules, pilots' certificates, and licences; the uniformity of technical terms and symbols; and the equipment of aircraft with medicine chests.

## S. Smith and Sons Make Merry

ON February 27 last, S. Smith and Sons (M.A.), Ltd., held a concert in the canteen at the Cricklewood Works in aid of the Greater London Fund for the Blind, when the following artists—themselves blind—appeared: Miss Bella Modiano (soprano), Mr. J. J. Delmage, Mr. Adolph Fowler (violin), Mr. Wilden Knight (entertainer), and Miss Parham.

On Friday, March 7, "Smith's Accessories Dance" was held at the Salon de Danse, Willesden Green.

## AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: cyl. = cylinder; I.C. = internal combustion; m. = motor  
The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

### APPLIED FOR IN 1922

Published March 13, 1924

- 32,987. GOODYEAR TIRE AND RUBBER Co. Joining devices for airship gas-bags. (196,888.)  
33,612. H. LIURETTE. Flying-machine. (201,127.)

### APPLIED FOR IN 1923

Published March 13, 1924

- 1,659. SPERRY GYROSCOPE Co. Gyroscopic compasses. (192,381.)  
2,269. DORNIER METALLBAUTEN Ges. and C. DORNIER. Metal outer skins for supporting planes. (195,938.)  
3,553. H. F. PARKER. Airships. (211,334.)

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